ON BEING INDECISIVE: FUNCTIONALIST ANTECEDENTS AND PROCESSES IN THE PSYCHOLOGY OF INDECISION AND INDECISIVENESS

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May 2017

A thesis submitted for the degree of Doctor of Philosophy (Clinical Psychology)
of The Australian National University.

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DECLARATION

I declare that this thesis reports my original work, that no part has been previously accepted and presented for the award of any degree or diploma from any university, and that, to the best of my knowledge, no material previously published or written by any other person is included, except where due acknowledgement is given.

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ACKNOLWEDGEMENTS

The clinical psychologist and psychoanalyst Sandra Buechler (1998) poetically described the need for a therapist to bring an "internal chorus" to their work. This chorus brings continuity, comfort and creativity, particularly in moments of absence, aloneness and loneliness. The doctoral journey also contains many moments of such solitude. I express my deep thanks to those who have been part of my internal chorus along the way.

I am especially grateful for my real-life chorus of support; those whose presence, kindness, encouragement, wisdom and belief in me has sustained me through this long journey. These people, to borrow the language of contemporary jurisprudence and law about decision-making, have been my "decision supporters". They have guided me, listened to me, helped me (especially when I have been too stressed or decision fatigued to be particularly productive or efficacious), and have occasionally intervened in my best interests. I thank, in particular:

- My supervisor, Professor Mike Smithson, who has graciously shared his immense wisdom with me since my time as an undergraduate psychology student, who has encouraged me to be curious and to discover new things in this project and as a person, and who has instilled in me an appreciation of the unknown, uncertain and unknowable;
- My panel members Associate Professor Richard O'Kearney and Dr Dirk Van Rooy, and my friends, teachers and clinical supervisors from the clinical psychology program, who were all part of a transformative time of growth and learning. I particularly acknowledge Steph, Deb, Kristie, Jodie, Lian, Rizal, Betty, John and Evi, and my first clinical supervisor Salih Ozgul, who all demonstrated unconditional and undeserved positive regard towards me;
- My colleagues at the ANU College of Law, who have inspired me and have given me many rewarding opportunities as a researcher and lecturer, and who have been the source of much-needed humanity, warmth and selflessness within the academic world. I especially thank Professor Tony Foley, Associate Professor Vivien Holmes, Margie Rowe, Anneka Ferguson, Associate Professor Mark Nolan and Associate Professor Gary Tamsitt;

- My wonderful friends, especially Kun, Andrew, Craig, Will, Lachlan, Liz & Sofia, whose affirmation, patience, inspiration and humour have kept me grounded, connected, valued, inspired and motivated;
- My most loving parents, and my dearest late grandma, who give everything from the heart to look after me, to nourish me in body, mind and spirit, and to remind me of what is most important, and without whose sacrifice, support, provision and faith I could not have achieved any of this; and
- Mabel Tsui, my companion, best friend, and my wife, for always seeing and bringing out the best in me, for putting up with my indecisiveness, for helping me through the times of struggle and doubt, for once again being a marvellous editor, and for endlessly infusing my life and future with vivacity, love, hope and joy.

ABSTRACT

This thesis advances a psychological model of indecision and indecisiveness by way of a functionalist approach to decision-making. Understanding how and why people have difficulty making decisions requires looking beyond the content and outcomes of a decision problem. It requires identifying the multiple motivations, expectations and experiences of the decision-maker. The first part of the thesis is a metatheoretical and theoretical exposition to make room for the functionalist underpinnings of indecision and indecisiveness. This begins with recognising that decision-making is a psychological activity over time which involves the exercise of the decision-maker's agency. After reviewing the limited literature on indecision and indecisiveness, a new model is proposed based on three functional motivations of a decision-maker: (i) attaining good decision outcomes, (ii) managing the demands of a good decision-making process, (iii) and being a good decision-maker. Successfully realising each of these motivations can be difficult, resulting in indecision. Indecision is compounded when multiple motivations collide within a decision event. The present model posits that each decisional motivation corresponds to a distinct indecision process, namely *outcome indecision*, *process indecision* and *self-presentation indecision*. These indecision processes are influenced by aversive and avoidant forms of indecisiveness, which draw attention to different aspects of a decision and the decision-maker. Three studies tested and refined this model. Study 1 provided factor-analytic evidence of aversive, avoidant and ruminative dimensions of indecisiveness using a composite trait measure. The characteristics and effects of each dimension were evident when correlated against other personality constructs and measures relating to a recalled recent experience of indecision. Study 2 used two contrasting decision-making tasks to elicit process indecision and account for some antecedents of outcome indecision. Behavioural, process-tracing, self-report and psychophysiological data indicated that such indecision could be expressed in both approach and avoidant ways depending on the interaction between indecisiveness, appraisals of the task and self-regulatory capacity. Study 3 was a novel behavioural decision-making task in which participants' attention was drawn to different aspects of being a decision-maker. In addition to replicating key previous findings, the results showed evidence of self-presentation indecision when participants' identity as an indecisive person was salient. Finally, the thesis considers the implications of the model for the conceptualisation and treatment of clinical indecision. A proposal for the transdiagnostic psychological treatment of indecision is set out based on the functionalist model.

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ABBREVIATIONS

AMQ	Autobiographical Memory Questionnaire (Rubin et al., 2003)
ANU	Australian National University
APA	American Psychiatric Association
BAS	Behavioural activation system
BIS	Behavioural inhibition system
CBT	Cognitive-behavioural therapy
CDT	Charity Decision-Making Task (Study 2)
CFA	Confirmatory factor analysis
DASS-21	Depression Anxiety Stress Scales, 21-item version (Lovibond & Lovibond, 1995)
DFE	Decision from experience
DSM	*Diagnostic and Statistical Manual of Mental Disorders*
EFA	Exploratory factor analysis
GLMM	Generalised linear mixed model
GZLM	Generalised linear model
HF-HRV	High frequency band of heart rate variability (0.15–0.4 Hz)
HRV	Heart rate variability
I-PANAS-SF	International Positive and Negative Affect Schedule, Short Form (Thompson, 2007)
IS	Indecisiveness Scale (Frost & Shows, 1993)
IS-R	Indecisiveness Scale, Revised (Rassin et al., 2007)
JDM	Judgment and decision-making
LDT	Lexical Decision Task (Study 2)
OCD	Obsessive-Compulsive Disorder
OCPD	Obsessive-Compulsive Personality Disorder
PANAS-X	Positive and Negative Affect Schedule, Extended Version (Watson & Clark, 1994)
PFIS	Personal Fear of Invalidity Scale (Thompson et al., 2001)
rRST	Revised reinforcement sensitivity theory
UP	Unified Protocol for Transdiagnostic Treatment of Emotional Disorders

INTRODUCTION

"Simple it's not, I'm afraid you will find, for a mind-maker-upper to make up his mind."

Dr. Seuss, *Oh! The Places You'll Go!*

Making decisions is hard, but being a decision-maker may be even more difficult. This thesis seeks to apply a functionalist account of being a decision-maker to develop a psychological theory of indecision and indecisiveness. It does so from the vantage point of the "mind-maker-upper" — the decision-maker — rather than from the vantage point of the decision. The following chapters are therefore not so much concerned about the making of difficult decisions, but considers these challenges alongside the difficulty of decision-making, and of being a decision-maker.

One of the initial problems in this inquiry is the relative lack of research interest about what it means to be a decision-maker, as compared with the increasing interest in how we decide. A great deal depends on recognising the difference. A *decision* can exist as an abstract, imposed and impersonal concept. They are often created, resolved and implemented without much awareness or intentional intervention. Most of our own decisions are invisible, and many decisions are made for us without us noticing. Even when we are conscious of the substance of a difficult decision, evaluating possible alternatives to get the best outcome is only one of the motivations of a decision-maker.

Decision-making, by contrast, is a psychological activity: it requires the active participation of the decision-maker in an event which has wider temporal boundaries than just the instantaneous moment of choice. This performative dimension of decision-making requires psychological agency and effort. These demands can give rise to aversive emotions and negative cognitions. Managing the activity of deciding is itself an adaptive challenge on top of the difficulty of selection and the attainment of good outcomes.

Being a *decision-maker* goes even further. Expectations from others and about ourselves inform how we ought to be as decision-makers. Being a decision-maker is one part of our personal and social identity, and how we play out this role communicates something about ourselves, including our worth and status. In a society that values choice and decisiveness, we therefore wish to avoid looking indecisive. We

can sometimes be motivated to look more competent and decisive than we are, even if doing so is ultimately harmful to our decision-making.

To be clear, a functionalist account of indecision does not mean looking specifically at the functions of indecision itself. Rather, it asserts that indecision can only be understood by understanding the multiple motivations involved in being a decision-maker: not just attaining good decision outcomes, but being good at the process of decision-making, and being and appearing to be a good decision-maker. These motivations are not necessarily consistent with each other. Indecision is understood as the difficulty or dysfunction in carrying out these goals within a given decision activity. Conflicting motivations can create further indecision, as can the cascading of indecision from different motivational sources.

Indecision is sometimes expressed in overt and traditionally recognised behaviours such as taking a long time to make a choice or requiring more information before deciding. However, since there the decision-maker has multiple motivations, it follows that there is also no one phenotype of indecision. The common categorical and negative identification of indecision as delaying the resolution of a decision omits much of the psychological activity on the part of the decision-maker. In addition to greater engagement with the decision, indecision can also be expressed in an avoidant way. Avoiding decisions, making unavoidable decisions as quickly as possible, or distancing oneself from decision-making are also ways in which indecision can be expressed. A psychological and functionalist account of indecision must be able to account for these contrasting processes and expressions, but this is not possible with the available models and research.

Outline of Chapters

In order to arrive at a new psychological model of indecision and indecisiveness, the first part of the thesis (Chapters 1–3) addresses the meta-theoretical question of how we understand both decision-making and indecision, followed by a review of the research and then a reconstruction of the theory about indecision and its trait form, indecisiveness. Chapter 1 begins by noting the assumptions and limitations of normative utility-based models of decision-making in the judgment and decision-making (JDM) literature when applied to indecision. Many theories of decision-making are premised on a single and instrumentalist motivational basis: that decision-making is about the efficient pursuit of goals through making quantifiably good choices. When applied to indecision, such an approach is not only functionally narrow but can also

inadvertently shift the focus to decisions rather than decision-makers, further restricting the scope of inquiry.

While acknowledging that a theory of indecision must look beyond the field of JDM, there is also no benefit in disregarding this literature and inadvertently creating a parallel theory of decision-making. The second half of the chapter shows that other motivations of the decision-maker, and other ways of placing value on decision-making, are well-developed in philosophy. Moreover, even a brief overview of recent socio-cultural developments shows that the pursuit of good outcomes as the dominant goal of decision-making is a recent development. Placing this particular motivation in the context of other motivations provides a way to reconcile the JDM literature with a more humanistic psychological understanding of indecision and indecisiveness.

Chapter 2 then moves into a critical review of the psychological literature on indecision and indecisiveness. This review identifies ways in which the current state of both theory and measurement are deficient, confusing or unhelpfully erase the decision-maker. The chapter also questions the common tendency to see indecision and indecisiveness as monolithic constructs, which lead to their operationalisation and measurement in either overly-inclusive or overly-narrow ways. The review also finds that glimpses of the human decision-maker can be found in the empirical literature. More attention needs to be paid to these important observations.

In light of these problems and gaps, Chapter 3 proposes a new and extended model of indecision and indecisiveness. The model sets out three indecision processes which emerge from a threat or obstruction to the three motivations of the decision-maker mentioned above. The motivation for good decision outcomes can be impaired through *outcome indecision*, while the performative aspect of good decision-making can encounter *process indecision*, and trying to appear as a good decision-maker can produce *self-presentation indecision*.

Another important point of extension is the integration between trait and state forms of decision difficulty. This stands in contrast to the default position of seeing indecisiveness merely as the frequency of indecision. Instead, the expectancies and preferences shaped by indecisiveness are hypothesised to influence attention and appraisal processes even in advance of a decision. Moreover, following a small number of previous studies, the chapter discusses two contrasting dimensions of indecisiveness included in the model: aversive indecisiveness and avoidant indecisiveness, both of which have different influences on the experience of indecision and its subsequent expression.

Three empirical studies then seek to test and refine this model. Chapter 4 (Study 1) is a report of a correlational survey-based study about indecisiveness and recalled indecision experience. The study found evidence for the multidimensionality of indecisiveness using a composite scale. Stable distinctions were observed between indecisiveness as tendency towards aversive experience in decision-making, the presence of avoidant and threat-oriented cognitions towards decision-making in the context of perceived decisional incapacity, and indecisiveness as the tendency to ruminate after a choice has been made. These factors were correlated with measures based on participants' self-reported recent experience of indecision. The results provided preliminary support for different functional and experiential bases for each form of indecisiveness as they related to indecision.

Chapter 5 (Study 2) sought to extend these results using an in-lab experimental study. The study made use of two contrasting decision-making tasks to elicit indecision, particularly process indecision. The study examined the influence of the aversive and avoidant indecisiveness factors identified in Study 1 on indecision processes and behaviours. The study also manipulated the content and context of the decision, including the difficulty of the decision problem and the self-regulatory resources of participants. Behavioural and self-report measures were supplemented by psychophysiological measures of heart rate variability (HRV) to examine the effect of stress and self-regulatory capacity. The results supported the preliminary findings in Chapter 1 that there is a distinction between approach and avoidant expressions of indecision, which were differentially predicted by the indecisiveness dimensions but also depended on self-regulatory status and situational demands.

A follow-up experimental study is described in Chapter 6 (Study 3). This study involved a novel online decision-making game. Combining elements of the decision-making tasks in Study 2, the game involved a minimal content decision-from-experience problem with a manipulation of the way in which the participant engaged with the task as a decision-maker. In addition to replicating key findings about process indecision, the study found evidence of self-presentation indecision. Participants who were primed to be aware of their own indecisiveness and experience of indecision were more likely to express behaviour consistent with attempts to minimise the appearance of indecisiveness, especially in participants for whom decision-making was a more aversive experience.

The findings from all three studies are considered together in the general discussion, Chapter 7, especially as they inform the theoretical model proposed in

Chapter 3. While the studies support the model as developed, they also bring to attention many issues which have not yet been examined or require further investigation. Accordingly, the chapter also identifies key issues for future empirical and theoretical consideration.

Finally, Chapter 8 considers indecision from a clinical psychological perspective. This chapter examines three ways in which indecision has been considered to have clinical significance: (i) as an upstream problem to other pathologies, (ii) as a symptom of another psychological disorder, or (iii) as a clinical problem in itself. The chapter then sets out a transdiagnostic approach for the psychological intervention for indecision as a primary presenting clinical problem. This is informed by the theory and data from the previous chapters. The flexibility of the transdiagnostic approach allows it to be applied readily to clinical indecision, especially in addressing problems relating to self-perceptions, emotion regulation and experiential avoidance. While substantial further clinical research is needed, this concluding discussion of psychological interventions demonstrates the relevance of a psychological model of indecision which considers the decision-maker in context.

CHAPTER 1:
TOWARDS A PSYCHOLOGY OF INDECISION

Fittingly for a thesis on indecision, this chapter lingers with deliberate caution on some preliminary choices in anticipation of things yet to come. The chapter begins with a meta-theoretical inquiry, which is a necessary first step before launching into the task of reviewing and developing theory on decision difficulty. "Decision difficulty" is used here as a temporary umbrella term for both indecision and indecisiveness.

An underlying assertion of this thesis is that decision difficulty is primarily situated in the decision-maker rather than as a product of a given decision. This is a subtle but critical distinction. Many theories of decision-making give considerable normative weight to the importance of having accurate representation of decisions and their role in the pursuit of desired goals and outcomes. On the other hand, a theory of decision difficulty requires an understanding of the motivations of the decision-maker, including as a struggling decision-maker who does not want to experience indecision or to appear indecisive. Understanding decision difficulty, therefore, requires more than an application of decision-making theories. It also requires an initial stance which is sufficiently removed from the received view so that it is possible to evaluate and extend it. This is a meta-theoretical task.

Wallis' (2010) review of meta-theory and meta-theorising in the sciences and social sciences reveals a heterogeneous set of definitions, but also some common themes. Metatheory is not only a way to categorise or integrate combinations of theory, but to analyse the underlying assumptions of theories and to make these explicit to pose new questions (Abrams & Hogg, 2004). The first part of this chapter examines the assumptions and values of normative theories of decision-making and how adopting these unquestioningly can lead to a narrow conceptualisation of decision difficulty. A social functionalist approach is instead adopted to explore the multiple motivations and goals of decision-making and decision-makers in order to understand indecision.

Branching out, then, from the judgment and decision-making (JDM) literature, the second part of the chapter investigates indecision from the perspective of the decision-maker from other disciplinary perspectives, beginning with recurring themes in moral philosophy. Features epiphenomenal to JDM theories, such as character, identity and impression management are of crucial importance when understanding the motivations and struggles of a decision-maker. These sources of wisdom are then contrasted with a contemporary sociological overview of how the moral failure of

certain forms of indecision have been co-opted and distorted by an economic and instrumental view of decisions. The weight given to the outcome of choices and the costs of not choosing can create unintended consequences which may reinforce distorted views of decision and, thus, lead to counterproductive attempts to minimise perceived indecisiveness. These dimensions of being a decision-maker are essential as foundations for evaluating the literature on decision difficulty and setting out an updated model and empirical project.

On Decision-Making and Decision-Makers: Several Roads Diverged

Appropriate for the topic of this thesis, and with apologies to Robert Frost (1916/1931), *three* roads are not taken in setting the theoretical parameters for decision difficulty. These are three ways of thinking about indecision and indecisiveness which lead to dead ends or impossibly circuitous paths. All three relate to the relationship between decision difficulty and normative models of decision-making.

There is no shortage of material to aid in our understanding of how people make decisions. The increasingly influential and wide-reaching JDM literature provides a rich source of theory and evidence at descriptive, normative and prescriptive levels. We have a solid basis to be informed about not only how people decide, but also how we should evaluate decision-making and what can we do to improve individual and collective decision-making (Baron, 2008). Besides, most of the JDM literature has its origins in psychology. It may seem reasonable, therefore, that a psychological theory of decision difficulty could be constructed as a special case or subset of decision-making as informed by the JDM scholarship. This thesis suggests otherwise.

Indecision as Negation

Firstly, a theory of indecision should not primarily be a negative theory — that is, one defined in opposition to normative decision-making. Nor should indecision be primarily seen as a pathology of decisional outcomes. Of course, indecision may involve the absence of a decision or defects in processes relating to judgment and choice. These possibilities will be introduced in Chapter 3. However, indecision should not be identified primarily by what is absent from decision-making, as assessed against normative standards of rationality. Such a theory would be limited on account of being derivative and passive, and therefore tends to ignore the active dimension of indecision on the part of the decision-maker.

A negative definition of indecision is also a dichotomous one. Avoiding indecision as the negation of decision-making also steers clear of the obvious difficulty of setting arbitrary boundaries for where "normal" decision-making ends and where indecision begins. This also unfetters the measurement of indecision and indecisiveness from crude outcomes which do not consider the experience of the decision-maker.

Positivist Indecision

Restraint is also needed in the other direction. There is nothing gained in a theory of decision difficulty which inadvertently recreates a general theory of decision-making. This undesirable possibility might emerge indirectly through the opposite process to that described above. Instead of starting from some normative benchmark for decision-making and looking beyond its boundaries to define indecision, we might instead be inclined to start by giving substance to indecision as a positivist construct, involving unique cognitive, emotional or behavioural patterns, antecedents and consequences.

However, there remains the problem of knowing how to differentiate indecision apart from ordinary and apparently successful decision-making. Despite standing as its own construct, it is too easy for such an approach to indecision to become reliant on the attributes of the decision problem itself, and thus to become a theory of "difficult decisions". In reducing indecision to a function of the decision problem, it is easy to overlook the broader dimension of the decision playing out in the experience of the decision-maker.

There is then the additional problem of having to fill in the gaps. Developing such a theory of indecision would be inefficient, as it must account for common aspects of the decision-making process not involving decision difficulty while also maintaining conceptual distinctiveness. There is a risk of redescribing processes which are already well-known and expressed in normative JDM models. For example, a discrete model of indecision would still need to account for how people seek out and make use of information as both a cause and consequence of indecision (i.e., duplicating the literature on optimal search and information processing). It would also need to account for decision-making behaviour when possible outcomes are probabilistic and based on incomplete, conflicting or ambiguous information (i.e., judgment and choice under uncertainty).

Indecision as Unbounded Phenomenology

A third problem arises in reaction to the previous two — which are perhaps more similar than they are different in partitioning indecision and decision-making. This is to consider indecision purely in terms of subjective experience. There are also some good intentions behind this take on indecision. One deficiency in the literature on decision difficulty, as will be considered in Chapter 2, is that there is insufficient attention given to the personal experience of indecision. In particular, the negative affective dimension of indecision and its self-regulatory implications require further attention, and will be one core focus of this thesis. The case could be cogently made that indecision is a discrete emotion. Indecision, specifically the affective experience of process indecision, is arguably unique in its emotional architecture (Scherer, 2009), with a distinctive appraisal structure, immediate affective and psychophysiological experience and resultant action tendencies.

However, consideration of indecision should not become unconstrained by motivational considerations. A psychologically sound theory cannot detach indecision from its status not only as a response to certain events but also as an event which prepares for other actions. A purely phenomenological approach to indecision which only considers the subjective mental state (i.e., indecision as *qualia*) may be placing too much emphasis on description. What indecision looks like is important, but perhaps less so than its role within the many functions of decision-making.

A Social Functionalist Approach

What is needed, then, is a way forward which says something substantive about the nature of decision difficulty in close conjunction with the decision-maker's goals and motivations. A social functionalist approach to decision-making provides a useful framework of as part of this initial meta-theoretical inquiry.

Functionalism evaluates a mental state from the perspective of what it does, rather than merely describing its properties, that is, what it looks like (Polger, 2012; Snyder & Cantor, 1998). Tetlock (2002), drawing on a pedigree beginning with William James (1890), argues that psychology is "inherently functionalist" (p. 451).[1] Critically, a functionalist perspective takes observations about behaviour or experience and places them purposively within a bigger structure. This structure may be a sense of

[1] William James' (1890) pithy remark, "My thinking is first and last and always for the sake of my doing" (Vol. 2, p. 333) is often quoted as a summary of his lived-out functionalist perspective to psychology.

internal order, structure and wellbeing (intrapsychic functionalism), or accurate and complete representations of the world (epistemic functionalism), or interpersonal and relational context of the persona as a social agent (social functionalism).

Haidt & Kesebir (2010) and Tetlock (2002) suggest that intrapsychic and epistemic forms of functionalism can be subsumed into social functionalism because of the inherently social nature of emotions, experience and the construction and communication of knowledge. However, in all cases, this bigger structure is directed towards the person's adaptive needs — even if a particular experience or expression of behaviour is maladaptive. Functionalism also addresses the issue of *multiple realisability*, which is the principle that mental states and experiences can have distinct antecedents but the same end state. Rather than requiring separate characterisations of each state, a functional approach helps find the right level of abstraction in finding some unity in the diversity of both causes and consequences. This is useful for a complex phenomenon such as indecision.

Motivations for Decision-Making: The Normative Model

For present purposes, the appropriate broader structure to consider is not indecision and indecisiveness, but decision-making more generally. As discussed above, decision difficulty cannot be properly considered from a psychological perspective if separated from the activity of decision-making. In some ways, examining the adaptive goals of decision-making is made easier because the JDM discipline is inherently functionalist. Understanding how decision-making translates into goal attainment is a core objective of JDM research, as summarised by Hastie (2001):

> What is the field of judgement and decision making about? The focus of research is on how people ... combine desires … and beliefs to choose a course of action. … Good decisions are those that effectively choose means that are available in the given circumstances to achieve the decision-maker's goals (pp. 665–666).

Decades of JDM research, of course, have shown that we may not always be capable, consistent or coherent in choosing a course of action. Systematic departures from adaptive goal pursuit through choice — often described as heuristics and biases — form the basis of much JDM research. Nonetheless, we are generally successful in making decisions which help us achieve our goals in adaptive and positive ways (Baron,

2008; cf. Wilson & Gilbert, 2005; Burkeman, 2013; Welsh & Ordóñez, 2014). As Yates, Veinott, & Patalano (2003) found after asking participants directly about their decisions, many things determine whether a decision is "good", but, overwhelmingly, good decisions are those which yield good outcomes.

This discussion about goals in decision-making is linked closely to the concept of rationality (Baron, 2008; Rachlin, 1989). While the term itself is far from uncontested, rationality is often defined and evaluated by reference to the outcomes of thought, decision and behaviour. Herbert Simon (1986), for instance, observed that although psychologists and economists had different ways of defining rationality, "everyone agrees that people have reasons for what they do. They have motivations, and they use reason (well or badly) to respond to these motivations and reach their goals" (p. 209).

Rationality in decision-making has therefore traditionally been about decision quality, assessed against concrete and objective goals. Moreover, decision-making is often treated in the JDM literature as if there is only one relevant goal. Despite the inclusive and holistic language of desires and motivations, there tends to be a disproportionate, if not exclusive, focus on the attainment of good substantive results through the mechanism of choice. For instance, the second half of Hastie's (2001) comments above show that there is a quick pivot from goals and adaptive challenges at the organismic level to a much more restrictive set of goals which are directly tied to the quality of the decision. This has the advantage of imposing some limits on the study of decision-making, as it is far easier to compare possible outcomes using some objective and disinterested benchmark than to wrestle with the multiple, changing and conflicting motives of a decision-maker, especially a decision-maker known to be "irrational", even if predictably so (Ariely, 2009).

In Tetlock's (2002) functionalist analysis, this approach is represented by the commonly-used metaphor of people as "intuitive economists". In this way of explaining an actor's thoughts and behaviour, the dominant function of decision-making is to maximise utility by applying the "calculus of self-interest" (p. 454). The model of rationality as depicted by the mythical *homo economicus* still casts a long shadow. Subjective expected utility is still the primary metric of the adaptiveness of a decision, even if such instrumental rationality is acknowledged not to be sufficient as either a descriptive nor prescriptive theory of decision-making (Over, 2004; Newell et al., 2007). There is still a deep reliance on the value of decisional outcomes (what is chosen, and its subjective utility, in conjunction with its probability). Indeed, the outcomes of

decisions are assumed to reveal a person's subjective utility functions and underlying preferences (Shafir & LeBoeuf, 2005). The acceptance of this process of reverse inference is curious: that there is a willingness to begin with choice and work back to the decision-maker, rather than beginning with the decision-maker and looking at choice as just one part of decision-making.

Consequentialist and non-consequentialist inputs. This is also known as the *consequentialist framework* of decision-making, which states that decisions should be evaluated according to the extent to which they facilitate the attainment of immediate goals. The consequentialist approach has a strong prescriptive dimension: that decisions therefore ought to be made based only on the assessment of the direct and substantive consequences of available choice alternatives (Elaydi, 2006; Loewenstein et al., 2001; Baron, 1994; Peterson, 2009).

Consequentialist decision-making can be contrasted with non-consequentialist decision-making. Non-consequentialist decisions are those made based on the consideration of things other than the expected substantive outcomes (Baron, 1994). According to the prescriptive standards of consequentialism, such non-consequentialist choices depart from the stated goal of the decision and therefore impair the ability for the best outcome to be realised. Such influences are considered anomalous, biased and avoidable. Often-cited examples of non-consequentialist inputs include the vivacity (as opposed to the value) of anticipated outcomes, associations between possible outcomes, and memories or past experiences of the decision-maker (Weber & Johnson, 2009; Hsee & Hastie, 2006). Interoceptive or person-by-situation heuristics and cues, including seemingly irrelevant things like the weather (Schwarz & Clore, 1983) are also considered non-consequentialist inputs to decision-making. So too is the "background noise" of other seemingly irrelevant actions and choices which ought not make a difference to how the decision-maker behaves (Savage, 1954). Common to these inputs are that they involve the inner experience of the decision-maker — and do so within the course of choosing, rather than just in terms of a subjective utility function in the calculus of outcomes. Metatheoretically, therefore, the acceptance of the consequentialist framework as the default assumptive view is significant for the position of the decision-maker. By dismissing non-consequentialist inputs as not just irrelevant but unnecessary, this approach erases the decision-maker and thus a large part of decision-making from consideration, especially in relation to other functional goals beyond those of the intuitive economist.

Process theories. Even process theories of decision-making tend to maintain the consequentialist emphasis on decision quality. "Process" here does not necessarily mean a shift of focus to the subjective experiential processes of the decision-maker. Most process theories extend static models of decision-making to account for temporal and dynamic influences. However, these additional considerations are still in service of evaluating the attainment of substantive decisional outcomes. Zeleny (1982), for instance, endorses the reverse inferential approach to the decision-maker by stating that a "process-oriented approach [is] based on the view that if one understands the decision process, one can correctly predict the outcome" (p. 85).

This is the case in contemporary sequential sampling or dynamic decision theories, such as Busemeyer's decision field theory (DFT; Busemeyer & Townsend, 1993; Busemeyer & Diederich, 2002) and its more recent dynamic version (DFT-D; Hotaling & Busemeyer, 2012). These models look at the path that a decision-maker takes towards making a singular choice with a determinate outcome. As Hotaling & Busemeyer (2012) observed, "the core of the model is a deliberation process that is assumed to produce overt decisions" (p. 69). Process theories and process tracing methods are primarily interested in the process by which the items in the choice set are evaluated until a particular outcome is reached (Schulte-Mecklenbeck, Kühberger & Ranyard, 2011). What is again omitted is any input or feedback loop based on the decision-maker's concurrent experience or motivations of making that decision.

From Decisions to the Decision-Maker

The consequentialist framework is not wholly accepted in the JDM literature, although attempts to extend the boundaries of rationality towards the decision-maker as a person may in fact have solidified the focus on the substantive outcomes and consequences of decision-making. Herbert Simon (1982, 1986, 2000), for instance, made the important distinction between substantive and procedural rationality as part of his model of bounded rationality.[2] Substantive rationality represents the "as if" world of classical economic rationality, built on the assumptions of informational completeness, costless decision-making and the perfect predictive ability. Procedural rationality, on the other hand, holds that decision theories "must include not only the reasoning processes but also the processes that generate the actor's subjective

[2] What ensues in Simon's model of bounded rationality is a decision-maker who is only partially rational by classical standards. Through exploiting regularities in the environment through the use of cognitive heuristics, such a level of classical optimisation is not needed – and indeed may be counterproductive – to adaptive decision-making and behaviour.

representation of the decision problem, his or her frame" (Simon, 1986, p. 211). Simon (2000) expands on the importance of the subjective world of the individual decision-maker, noting that:

> … rational behaviour in the real world is as much determined by the "inner environment" of people's minds, both their memory contents and their processes, as by the "outer environment' of the world on which they act, and which acts on them. A theory of bounded rationality, then, will be as much concerned with procedural rationality, the quality of the processes of decision, as with substantive rationality, the quality of the outcome. To understand the former, one must have a theory of the psychology of the decision maker; to understand the latter, one needs have only a theory of the goal (the utility function) and the external environment (p. 25).

However, there is still a hard limit to which the inner world of the decision-maker is relevant. This psychology of the decision-maker is limited to the accuracy of internal representations, which are still inherently linked to information processing in relation to substantive outcomes. Bounded rationality is therefore advantageous in working towards a theory of decision difficulty in recognising that decision-making can be cognitively costly and that the environment has a role in mediating this complexity and computational demands. However, even this extended form of rationality does not strictly extend to non-consequentialist which recognise other functions of being a decision-maker.

Similarly, Rachlin (1989) echoes Simon's (2000) dicta in stressing that in decision-making, "*a person* [emphasis added] is faced with the [decision] situation" (p. 234). Decisions do not exist in the abstract as a set of depersonalised comparisons and computations. Instead, it is:

> … the interior of a person [which] is the locus of the decision theorist's interest, since that is where the decision process is supposed to occur. A good decision theory is one that adequately explains this internal process (p. 234).

Yet Rachlin (1989) immediately goes on to place the same boundaries on that vast interior of a person as Simon (1986, 2000). He notes that "the initial object of a decision theory is to explain how a person converts an objective, external presentation into a subjective, internal representation" (Rachlin, 1989, p. 235). Once again, the

decision-maker is important, but only insofar it explains the accuracy of how the decisional information is represented and therefore the quality of the decision (Newell et al., 2007).

The reluctant decision-maker. One of the few models of decision-making which attempts to recognise more the psychological experience of the decision-maker is Janis & Mann's (1977) conflict theory. Its starting point paints a radically different picture of the decision-maker than the dispassionate and disembodied decision-maker under most normative models of decision-making:

> Like [Kurt] Lewin, we see man (*sic*) not as a cold fish but as a warm-blooded mammal, not as a rational calculator always ready to work out the best solution but as a reluctant decision maker — beset by conflict, doubts, and worry, struggling with incongruous longings, antipathies, and loyalties, and seeking relief by procrastinating, rationalizing, or denying responsibility for his [or her] own choices (p. 15).

As such, conflict theory recognises that the process of deciding — of being a decision-maker — can often be a difficult and costly process. Specifically, the theory recognises that decision-making can result in stress, the experience of "acute agitation" (p. 3) and unpleasant emotion (i.e., aversive indecision), even within the apparently mundane choices of everyday life. As the name of the theory suggests, this stress is triggered by a decisional conflict, which is at its simplest, is the simultaneous inclination to accept and reject a course of action. That is, the reluctant decision-maker is ultimately only reluctant because of the consequences of the decision, rather than because of the demands and consequences of being the decision-maker.

Not all decisional conflicts are difficult. A decisional conflict only becomes stressful if there are significant consequences involved in the decision (described as "consequentiality").[3] Without such consequentiality, there is no conflict and stress in the decision-making process — and therefore also no indecision, which sets up an important boundary condition for decision difficulty (Baron & Weber, 2001). Therefore there must be some investment by the decision-maker ("ego involvement"), which includes the presence of hot cognitions and emotions in relation to anticipated outcomes of the decision.

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[3] Conflict theory also recognises the situation of where the level of stress is inappropriately low, leading to unconflicted adherence or unconflicted change: coping strategies which do not involve proper consideration of the information or outcomes.

Janis & Mann (1977) intentionally went beyond the scope of most theories of decision-making, especially prototypical game theoretic approaches, which assumed that there is only one salient goal. Instead, Janis & Mann (1977) recognise that there are multiple functionalist motivations in any given decision, even if they are still anchored to the outcome of the decision rather than the process of deciding. Janis & Mann (1977) identified four relevant motivations, which are also sources of decisional conflict giving rise to stress.

These are where a consequential decision (i) involves utilitarian gains or losses for the decision-maker,[4] (ii) involves utilitarian gains or losses for others, (iii) could result in self-approval or self-disapproval, or, (iv) could result in approval or disapproval from others. The first two consequences are consistent with the utility-maximising function of the intuitive economist, albeit a more other-oriented economist than in the classical model. The latter two consequences relate to how the decision might affect the decision-maker's self-esteem and reputation as a competent decision-maker.

Self-approval or self-disapproval relates to the effect of the decision on the decision-maker's moral standards, ideals, values, self-image, as well as motivations for creativity or originality. It takes the form of the question, "will I feel proud or ashamed of myself if I make this choice? Will I be living up to my ideals? Will this decision enable me to become the kind of person I want to be?" (p. 139). Approval or disapproval from others, on the other hand, includes anticipated social feedback such as criticism, ridicule, praise or respect flowing from the decision. The question posed by the decision-maker here might be: "Will my friends and other important people in my life feel that I have made the right choice?" (p. 139).

In both of these cases, the consequences involve other functional motivations beyond only the utility of the decisional outcome. Janis & Mann (1977) called these *nonutilitarian consequences*. This is a term which is synonymous with non-consequentialist influences on decision-making (Baron, 1994), but without the negative prescriptive claim. Conflict theory explicitly recognises that there are situations where these nonutilitarian outcomes outweigh utilitarian gains and losses in shaping the decision-making process and outcome, and thus ought to be considered. However, these motivations are still tied to outcomes of the decision rather than to the activity of deciding. After all, the prescriptive schema in conflict theory for resolving decisional

[4] While Janis & Mann (1977) initially refer to consequences as involving both gains and losses (e.g., p. 50), subsequent emphasis is placed almost exclusively on anticipated losses (e.g., p. 73).

conflicts is intended to be compatible with a subjective expected utility model. Decisions are evaluated according to the extent to which they can maximise gains and avoid losses in consequences. Even if these consequences are strictly nonutilitarian, they do not extend to the personal or social consequences of the act of deciding.

This becomes clear in how the theory frames the five coping responses to decisional conflict and stress, four of which are maladaptive in all but a few circumstances. Some of these coping responses, such as *hypervigilance* (panicked or impulsive information search and resolution to the decision) or *defensive avoidance* (avoiding decisional conflict by procrastinating, shifting responsibility or rationalising), have direct application to indecision behaviour and will thus be addressed further in Chapter 3. However, it is at this point that the decision-maker once again begins to fade from view. The core of conflict theory is making predictions about which coping patterns are activated, which are based on forming accurate judgments in relation to proposed courses of action. The four maladaptive strategies may yield different patterns of information preferences, but they all result in incomplete search, appraisal or contingency planning (Janis & Mann, 1976). All of these directly relate to the substance of the decisional outcomes.

The focus shifts further towards decision quality when the four maladaptive coping strategies are contrasted against an ideal response, *vigilance*, which is where "the decision-maker searches painstakingly for relevant information, assimilates it in an unbiased manner, and appraises alternatives carefully before making a choice" (Janis & Mann, 1976, p. 658). Conflict theory then becomes concerned about the extent to which stress will "facilitate or interfere with vigilant information processing" (Janis & Mann, 1977, p. 49), which resembles *homo economicus* more closely than perhaps would have been initially expected.

At a metatheoretical level, conflict theory is one of the few theories which explicitly recognises and normalises the decision-maker's experience of stress and conflict. To the extent that decision-making results in such an unpleasant state, the activity of decision-making is also to be actively minimised or avoided if possible. This depiction of the reluctant and sometimes panicky decision-maker sets it apart from most other normative and consequentialist theories because of its humanity, and it thus contains a psychologically richer set of assumptions about the decision-maker.

Even so, it only recognises these experiences of conflict as an antecedent to coping mechanisms which are assumed to be necessarily maladaptive. Conflict theory does not explain how the nonutilitarian consequences of decision-making — primarily

the self-esteem and reputation of being a decision-maker — affect the decision-making process. What remains is a need to extend these nonutilitarian considerations to the consequences of being a sometimes struggling and reluctant decision-maker. This includes the self or social approval or disapproval about being a competent decision-maker. While this is briefly anticipated in the objectives of conflict theory (e.g., Janis & Mann, 1976, p. 657), it becomes diluted in a project aimed at improving decision quality.

Beyond the Intuitive Economist: Other Decision-Making Metaphors

Given the weight of the outcome of decisions, what is needed to work towards a theory of decision difficulty are more than just adjustments or extensions to various models of rationality. Given the power of metaphors to shape thought and theory (Lakoff & Johnson, 2003), different metaphors to describe decision-makers ought to be considered in order to look beyond decisional outcomes.

Tetlock (2002) set out three additional metaphors, the intuitive politician, the intuitive prosecutor, and the intuitive theologian. These are on top of the dominant two in the JDM literature: the intuitive economist, as mentioned, and the intuitive scientist. For the intuitive scientist, the function of judgment and decision-making is as a value-neutral seeker of truth and causal and epistemic understanding. This perhaps has less direct relevance in its pure form for decision difficulty.

These other metaphors, with their different goals and objectives, may do a better job of explaining and predicting behaviour in relation to decision-making. That is, we can be functionalist (and functionally pluralist) in relation to decision-making without being narrowly consequentialist. We can briefly consider just two, the intuitive politician and the intuitive prosecutor merely as examples of possible other motivations — rather than as new ways to pigeon-hole the decision-maker. Tetlock (2002) recognises that multiple metaphors may operate concurrently as a functionalist set of checks and balances. And, after all, the metaphors themselves are non-exhaustive suggestions for further research rather than a comprehensive taxonomy of motivations. The aim, however, remains: to include more of the decision-maker — and a broader set of desires, goals and motivations — within a psychological theory of decision-making, and therefore decision difficulty.

As *intuitive politicians*, people are acting with an awareness of their accountability to multiple constituents. As such, a primary adaptive objective of decision-making is not necessarily to maximise personal or even collective utility but as

an act of impression management. If the decision-maker can earn the trust of others, then even independently and objectively destructive actions (i.e., those with negative utility) can still be strategically advantageous, or at worst, forgiven. To borrow the motto used by US comedian Stephen Colbert, *videri quam esse* (to seem to be, rather than to be), may be more in some instances more important than the traditional and virtuous *esse quam videri* (to be, rather than to seem to be). These motivations — which are fundamentally different to those of the intuitive economist — directly shape not only what outcomes of decisions are reached and how the decision-making process looks.

The behaviour of the intuitive politician may at times resemble indecision. Delay and apparent hesitation may be strategically beneficial rather than impediments, motivated by a need to "buy time" or to appear consultative to key constituents. At other times, avoiding decisions may serve to maintain the status quo or to maximise the benefits of remaining open and non-committal. Even changing one's mind may be used strategically if it fits with a broader character-affirming and trust-building narrative.

Decision-makers can also be acting as *intuitive prosecutors* who are motivated to defend social systems endowed with legitimacy. This translates to punishing norm violators, especially those who cheat the system or shirk social responsibility, while also increasing standards of accountability. The intuitive prosecutor role is relevant to the interpersonal dimension of decision-making, particularly in the case of outcome interdependence (e.g., in Prisoner's Dilemma or other zero-sum type games: Halevy, Cohen, Chou, Katz, & Panter, 2014). Since perceptions of fairness are salient, substantial psychological activity is directed to interpreting the strategy and intentions of others beyond that which is required to maximise the utility of the immediate outcome.

Additionally, the punitive dimension of the intuitive prosecutor is tempered by a commitment to procedural fairness. The intuitive prosecutor is sensitive to Type I and Type II errors, and is careful to prevent both an innocent person being punished and a guilty person escaping reprimand, respectively. Psychological resources in the course of decision-making are directed to assessing the responsibility, finality and legitimacy of the decision process and the manner in which it is made and communicated by the intuitive prosecutor themselves. Psychological effort is therefore required in regulating this expressive function of decision-making: what the decision says about the decision-maker as a person, and how that generalises to how people *should* act and decide. Relevant to decision difficulty, the intuitive prosecutor's duty to be fair also may

modify the person's appetite for risk and result in otherwise inefficient levels of caution. Requiring an abundance of time and information before making a decision may express itself as indecision, but may be motivated by a precautionary principle and a higher burden of proof in deciding, even if it leads to less outcome-optimised decisions or no decision at all.

For both the intuitive prosecutor and the intuitive politician — and the other metaphorical cast of characters — the decision-maker are still directed towards some kind of adaptive goal, but these are of a very different nature to the outcomes of maximising the immediate utility of a given choice. These other goals only become visible if we shift the focus away from a narrow consequentialism as the dominant functionalist position in decision-making theories.

Functionalism without Consequentialism: Implications for Decision Difficulty

For a psychological theory of indecision and indecisiveness, understanding the relationships between the immediate decision context and the applicable metaphors, functions and desires is therefore essential. The decision-maker may have multiple goals with different adaptive and functional bases playing out across different time courses. Decision-making is a multiple-motive activity, and these motives are necessarily compatible with each other. This becomes easier to see when the primary focus of the inquiry remains on the decision-maker rather than on the disembodied content of the decision problem. We are talking about the same person when it comes to both the goals and functions of decision-making. The person making a decision faces particular adaptive demands simply by virtue of being a decision-maker.

Deciding is a cognitively and emotionally taxing task which may compete with other adaptive demands, activities or goals, not to mention the status quo of doing nothing (Anderson, 2003). There are also the social demands of being the decision-maker, including the actual or perceived responsibility of being the one who chooses, as well as norms and expectation about *how* one chooses — including the appearance of decisiveness.

These immediate demands on the decision-maker are in addition to the adaptive demands of the content of the decision and the substantive and instrumental role of choice. These latter substantive goals may only be realised sometime in the future, if at all, whereas the goals and challenges of being the decision-maker are immediate. Although the decision-maker is often also the beneficiary of the substantive decision,

talking about decision-making (and decision difficulty) is to recognise the presence of multiple goals and types of goals in the activity of deciding.

Decision-Making as a Psychological Activity

One problem with the outcome-oriented model, discussed so far, is that it does not account for the plurality of motivations of a decision-maker. A secondary problem is that this default emphasis on outcomes leads to a collapsed temporal view of decision-making. This is evident in the second part of Hastie's (2001) summary of JDM research quoted above, that the decision-making is situated in the act of "choosing a course of action" (p. 656). What does this entail?

Philosopher Storrs McCall (1987) addresses this issue in his consideration of the multiple meanings of the word "decide". Temporally, he distinguishes between two definitions, which are illustrated in Figure 1.1. In the first definition (in Figure 1.1(a)), "to decide" refers to the instantaneous transition from one state to another, from "deliberation" to "having decided". This view of decision-making is often assumed by the consequentialist model in the JDM tradition. The computational work precedes the decision. Having acquired all the relevant information, the decision itself follows almost as an inevitability. As such, a decision is equivalent to choosing the course of action, which in classical models is synonymous with the substantive content and utility of the outcomes — the only relevant consideration in decision-making. The temporal component of decision-making is only in relation to intertemporal choice: the gap between the time of the choice and the realisation of the outcomes and the effects of such delay on the subjective utility function.

Dispersing the mental event of decision-making into the background reinforces the assumption that measurable decisional processes and outcomes are wholly sufficient to explain not only the subjective utility function but the motivations of the decision-maker. This approach depersonalises the person as decision-maker by condensing the complexities of decision-making into observable informational components and treating this as the basis for the change in decisional state. The decision-maker become a black box which distorts the representation of the decision problem and adds error to the calculation of outcomes, thereby causing suboptimal decisions. The result is that there is no psychological space to locate the experience of indecision. As a result, it is relegated to the precursors of decision-making (as factors which affect deliberation, including time and delay) and in the outcomes of decisions after the fact (whether a choice was made, and the utility of was chosen).

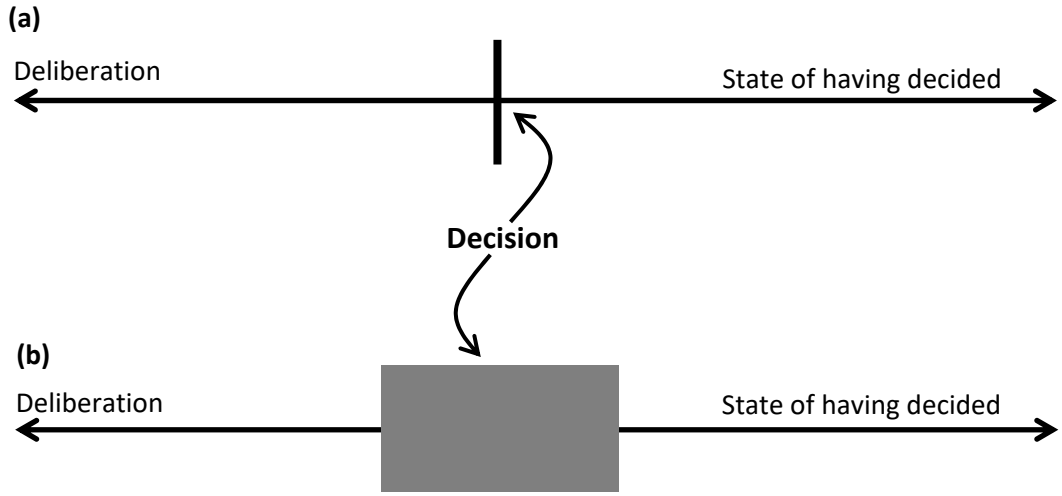


Figure 1.1. McCall's (1987) distinction between two different meanings of "decision" (adapted from McCall, 1987, p. 271).

By contrast, as shown in Figure 1.1(b), "to decide" can also refer to the decision-maker embarking on a distinct psychological activity. Here, deciding is as a "mental event" (p. 271), separate from the act of deliberating. Acting upon the information acquired about the decision and possible outcomes is a different psychological process to gathering acquiring and processing that information. As its own activity, deciding therefore has a start and an end point. Deciding may occur rapidly, but McCall (1987) notes that this psychological state nonetheless "occupies a non-null time interval" (p. 271). Deciding, in other words, requires agency, time, effort and contains a different set of demands than merely deliberating or acquiring information.

Even so, one could suggest McCall's (1987) second definition of decision is still insufficient, especially for the purposes of decision difficulty. For instance, there arguably should not be a clean boundary between deliberation and decision. If the state of deciding represents the more active and intentional state of *being* a decision-maker, this could still involve concurrent deliberation but in a way which shapes the deliberation process based on other functional and adaptive motivations. Being a decision-maker may also involve acting in anticipation of a decision, even in advance of deliberation.

Similarly, there may not be a clean break between the end of deciding and the state of having decided. Decision does not necessarily terminate with choice, and the post-decisional state might involve efforts to keep the decision open even after choice

(i.e., decisional instability or vacillation — making multiple sequential choices), or still being psychologically active as a decision-maker even if the choice is final (e.g., in the case of rumination or regret).

However, the point here is not to remain at this level of abstraction and to add more detail to McCall's (1987) conceptual attempt to recognise the multiple meanings of decision-making. It remains the case that conceptualising decision-making as a psychological activity is a useful step forward for a theory of decision difficulty. It forces a conceptualisation of indecision which looks beyond the choice information or terminal decision behaviour. The activity of decision-making also provides a container in which to place the subjective experience of indecision, as well as metacognition relating to decision-making and decision difficulty, schemas and social norms and identity.

Metatheory and Beyond

Perhaps no theory of decision-making in the JDM field will be sufficient to account for the decision-maker. This is not necessarily a problem, for, after all, this thesis would be redundant if indecision and indecisiveness could be subsumed into available JDM models. The preceding discussion has shown that the underlying motivational and adaptive assumptions behind the theory very significantly shape how decision-making is conceptualised and measured. Theories of decision-making which primarily relate to decision quality and decision outcomes will be very different to a theory about the decision-maker's experience of deciding. The invisibility of the decision-maker in the received view of decision-making poses significant limitations for the study of decision difficulty. Yet, at the same time, any research on decision difficulty must still be informed by the JDM literature. Prudent use of the theory and research evidence is required but in a way that a theory of decision difficulty does not erase the decision-maker from consideration.

Philosophical and Sociocultural Perspectives on Decision Difficulty

The task of arriving at a psychologically valid and satisfying theory of decision difficulty is made easier by first stepping away from the limited metaphors and concepts about decision-making in the JDM discipline. An excursus through the moral philosophical and contemporary sociocultural literature provides a deeper and more humanistic context for decision difficulty within the experience of the decision-maker.

Philosophy — rather than JDM and behavioural economics — is much more willing to embrace the idiographic and subjective perspective of the person as an imperfect decider conflicted between multiple motivations. As such, the contrast between the JDM research and what some philosophers have said about decision difficulty draws attention to the divergence of (non-consequentialist) values and assumptions which can be held in relation to decision-making. Such assumptions, schemas and expectations influence not only how decisions are made, but how decision difficulty is identified, operationalised and evaluated.

This is, however, not an attempt to construct a psychological theory directly from an admittedly limited and selective reading of philosophy (Zwaan, 2013). Indeed, many of the philosophical claims made are psychologically incomplete or implausible, but not necessarily more so than those made in the JDM literature. Instead, we proceed on this diversion in order to survey other ways to conceptualise decision-making and the decision-maker, and therefore decision difficulty. Moral philosophers, when talking about decision-making and decision difficulty, invoke the *conative*, not just the *cognitive*. Their encouragement for how we ought to decide provides a basis for understanding not only the norms about decision-making but how the act of deciding reflects and shapes the character of the decision-maker. Moreover, their observations and reflections yield valuable insights about the social and moral value of decisiveness and indecisiveness, and how this has changed over time. Although the psychological theory and research is recent and incomplete, these concepts have been discussed throughout history and continue to be expressed daily through the influence of social norms and schemas.

Buridan's Ass

The paradox of Buridan's Ass is sometimes used as a quintessential example of indecision. A hungry donkey is placed at an equal distance between two equally appetising bundles of hay. Unable to choose between them, the donkey starves to death (Rescher, 1960). In contemporary usage, Buridan's Ass is commonly used to express the idea of being "paralysed by choice". As JDM literature, the paradox can also be regarded as an example of criterionless choice, that is, a choice in the absence of preference.

However, these interpretations are a departure from how the paradox — which is not technically a paradox, since it contains no logical contradiction — was first used. The paradox, restated in a number of variants, significantly predates even Buridan

himself,[5] with Aristotle applying it in his cosmological treatise *On the Heavens* from around 350 BCE with a person in the place of a donkey. The early application of this paradox was in physics, as an analogy to explain principles of force and equilibrium in relation to moving objects such as planets.

It was not until at least the eleventh century that Islamic philosopher Al-Ghazali first applied the paradox directly to human decision-making, framing the problem as a hungry person being unable to choose between two equally delicious dates. However, even here the paradox was not used as an example of indecision but as a deliberately absurd example in the context of an ongoing debate about the existence of individual agency. The paradox contrasted mechanical determinism with free will. In the former case, the donkey (or person) is *being pulled* by attraction to the food, the equal pull of one bundle cancelling out the pull of the other. In the latter, the donkey has the ability and capacity to choose one bundle over another. Saint Thomas Aquinas (trans. 1920) similarly referenced the paradox in his *Summa Theologicae* as part of his analysis of whether a person chooses freely or of necessity. Buridan's Ass was invoked to illuminate the debate about the existence of free will and the ability to choose, not to consider problems of indecision or indecisiveness.

Despite not being primarily about the difficulty of choosing but about the basis of choice itself, how Buridan's Ass was applied contains some relevant lessons about the nature of decision-making and the role of the decision-maker. Like many others including Al-Ghazali, Thomas argued that some reason, no matter how trivial, must exist to differentiate one alternative from the other. Later, the German philosopher Gottfried Wilhelm Leibniz (1710/1985), in his principle of sufficient reason, denied that the donkey could ever starve to death, noting that:

> There will therefore always be many things in the ass and outside the ass, although they be not apparent to us, which will determine him to go on one side rather than the other (p. 150).

Since Bale 1 is identical to Bale 2 and there is no rational justification to prefer Bale 1 over Bale 2, or vice versa, any choice is better than no choice. This is what makes the problem absurd: the donkey could not starve to death. If the only thing

[5] Incidentally, thirteenth-century French philosopher and priest Jean Buridan, after which the dilemma is named, never formally stated the problem as such. His marginalia on the dilemma only made reference to a dog and not a donkey (Rescher, 1960).

lacking is choice itself, the decision problem could be resolved by finding or constructing such a difference between the bales.

A situation resembling Buridan's Ass is possible in non-human decision contexts. For example, electronic circuits can exhibit a problematic state called *metastability*, where the system is stuck between two binary values at least for a short time with no basis for conclusively selecting one value over the other (Denning, 2007). However, Buridan's Ass is an absurdity for human decision-making, which cannot be purely mechanistic because of the agency of the decision-maker.

This, of course, does not mean that indecision does not exist. Rather, identifying the decisive role of the decision-maker points us beyond the attributes of the alternatives or information space, as discussed in the first part of this chapter. When all else is equal, decision-making is not just about mechanically evaluating the subjective expected utility of the alternatives. Decision-making requires the decision-maker to resolve the decision problem. This may require an arbitrary construction of preference as the basis for choice. Alternatively, another motivation other than optimisation can form the basis of the decision.

Such a view gives further credence to the notion of decision-making as a mental activity over time (McCall, 1987). It is in this process of choosing that indecision is located, since there is no other basis to impede the transition from the pre-decisional to post-decisional state. The possibility for indecision may initially arise from the equal nature of the alternatives, but it is only sustained until the decision-maker appraises the problem as a decision and acts on it, rather than remaining passively stuck between the alternatives. Indecision, therefore, is found in the difficulty of resolving a decision and acting on it, and, as such, can involve both approach-oriented and avoidance-orietned processes.

Indecision is Death?

And yet, dismissing the possibility that Buridan's Ass would starve to death also has the effect of stating that choice is to be preferred over an absence of choice. This stance becomes more obvious in the way that the paradox has become appropriated over the centuries as a moral warning against indecision as inaction, rather than as an example used to ridicule the notion of choice as a mechanistic force. Two things occur in this change. Firstly, the moral and ethical context begins to illumine the personal and social expectations and aspirations of a decision-maker. Secondly, appropriating Buridan's Ass as part of decision-making occurred with in increased interest in the

complexities of human decision-making and indecision. It is one thing to state as a general principle that a person (or even a donkey) will not starve to death because of her or his agency. It is another question to then explore how this agency is exercised and to identify its its limits and obstacles.

One good example of this is in McCall's (1994, 2004) supposed "restatement" of Buridan's Ass in his railroad dilemma (not to be confused with the trolley problem in moral philosophy):[6]

> You are hiking with your spouse in a wild horseshoe-shaped valley with steep sides through which runs a railway line, and while you are crossing the track a heavy branch falls from a tree, pinning your spouse's leg. While pulling vainly on the branch you hear the whistle of an approaching train. You could succeed in flagging down the train if you ran down the track, but the echoes in the valley make it impossible to tell which direction the train is coming from (McCall, 1994, p. 261).

This intentionally personal dilemma, with its use of emotion-laden and urgent narrative is a significant departure from a somewhat humorous situation involving a hungry donkey. It is Buridan's Ass co-opted into a prevention mode of regulatory focus (Higgins, 1997) and into a loss frame (Kahneman & Tversky, 1984). However, the criterionless choice still remains. What happens in McCall's scenario? From the safety of a detached, outcome-oriented viewpoint, few could argue with his conclusion that running in any one direction is better than staying put. McCall (1994), however, acknowledges that the act of choosing under the pressures of this scenario would not be easy at all:

> How many of us might not run a little distance down the track, then back again at the next whistle in the fear that our choice of direction was wrong? Even though we know that oscillating back and forth leads to death, it takes a strong-minded person to choose one direction and run down the track without stopping until the train appears (pp. 261–262).

McCall (1994) thus uses his version of the paradox to recognise that the difficulty in this scenario rests with the decision to decide. The act of choosing is important (irrespective of the actual or anticipated outcome, which does not help with

[6] Descartes (1637/2008) also refers to a very similar scenario involving being lost in the forest in his *Discourse on the Method*, with a similar principle in mind, but with less emotional and personal intensity.

the choice of direction here). The psychological effort of acting on the decision and persisting with one's choice to resolution — and neither avoiding the decision nor hesitating in it — takes considerable strength of character. Without this strength and virtue, however, indecision can emerge. In this dramatised situation, the dangers are severe; "indecision is the road to death" (p. 261). While "death by indecision" (McCall, 2004, p. 129) is most clear in the case of hesitation or avoidance given a criterionless choice, it can also be generalised to all decision-making scenarios because it is the decision-maker themselves who makes the difference.[7]

Indecision and Character

The relationship between decision-making and character itself has a long history outside of psychology. The personal qualities of resoluteness and decisiveness have long been seen as a fundamental virtue. For Aristotle, the concept of a "deliberate choice" or an "intentional decision" (both being translations of *prohairesis*) is equivalent to one's moral character itself (Sherman, 1985; Pakaluk, 2005; Formichelli, 2009). Not only is one's character expressed through the results of choice as virtuous action, but the process of choosing is also considered to be the most proximate representation of virtue.

Of course, choice is not exercised merely to express virtue, but to bring about some good outcome (Sherman, 1985). A degree of consequentialism is inevitable, but it is not the main criterion by which a decision is evaluated. Good decisional outcomes are indeed important, but for Aristotle and others with an aretaic (virtue-based) view of ethics it is the character of the person which really counts. It is the capacity and ability to be decisive which is valued above the outcome of any given decision. That is, making decisions well, and being a good decision-maker*,* is something more than making a good decision. This centrality of the decision-maker and the personal activity of deciding is that which is missing from many psychological and economic models of decision-making.

This virtue of decisiveness or decisional capacity can be framed in the negative, not only as a failure to choose but a failure to act on and resolve decisions with deliberative choice. This is in turn regarded as a fundamental failure of moral character

[7] Therefore, non-human decision-makers would therefore also have difficulty with such decisions. For instance, Winfield, Blum & Liu (2014) designed robots to have an "ethical governor" with instructions to save humans from danger (i.e., from falling into a hole). In their study, when the robots were confronted with two human proxies in danger, in 14 out of 33 trials the robot did not decide on a course of action in time, resulting in both humans falling to their (simulated) demise.

(*akrasia*). Descartes provides a nuanced view of this state, which he terms *irresolution*. This term is equivalent to indecision for present purposes, but it is a significant choice of word. It emphasises that the problem of character does not lie merely in the lack of a decision outcome, but where there is some dysfunction in resolving the decision, which requires effort and agency on the part of the decision-maker.

Stephen Voss' translation of Article 170 of Descartes' (1649/1989) *The Passions of the Soul* is worth extracting here in its entirety:

> Irresolution is also a species of Apprehension, which, keeping the soul balanced as it were among many actions it is able to do, causes it to execute none of them, and thus to have time for choosing before deciding. In this, truly, it has some beneficial use. But when it lasts longer than necessary and causes the time needed for acting to be spent deliberating, it is extremely bad. Now I say it is a species of Apprehension, in spite of the fact that it may happen, when someone has a choice of many things whose goodness appears quite equal, that he remains uncertain and irresolute without on that account having any Apprehension. For this latter sort of irresolution arises only from the subject presented and not from any excitation of the spirits; that is why it is not a Passion unless one's Apprehension about choosing badly increases the uncertainty. But this Apprehension is so common and so strong in some that often, even though they do not have to choose, and see only a single thing to take or leave, it holds them back and makes them pause uselessly to look for others. And then it is an excess of Irresolution, arising from too great a desire to do well, and from a weakness of understanding, which only has a lot of confused notions and none that are clear and distinct. That is why the remedy for this excess is to accustom ourselves to form certain and decisive judgments about whatever is presented, and to believe that we always discharge our duty when we do what we judge to be best, even though perhaps we judge very poorly (p. 112–113).

Importantly, Descartes recognises that indecision can be adaptive, which is a novel concept in the literature reviewed so far. Irresolution facilitates deliberation and evaluation, which can lead to better choices. This is a good thing, and resists the other moral failure of action without deliberative choice — mindless or impulsive decision-making. However, irresolution becomes harmful when it crosses a threshold of taking "longer than necessary", thus getting in the way of virtuous action (Brassfield, 2013).

Descartes therefore draws an important distinction between potentially adaptive *nondecision* due to deliberation and maladaptive *indecision*, which is incongruent with good character. This is an important reminder that deliberation time alone is not sufficient as a marker of indecision. The reasons for the irresolution must also be considered.

Why, then, might a decision take longer than necessary? Descartes distinguishes between two kinds of situation. The first is a Buridan's Ass situation (i.e., "when someone has a choice of many things whose goodness appears quite equal": Voss, 1989, p. 112). The second is where apprehension in the decision-making process gets in the way of deliberation and choice, on the other. It is only the latter which he is concerned about.

Descartes does not regard Buridan's Ass as an example of passion-based (bad) indecision, since it occurs without any experience of apprehension. The indecision is purely a function of the informational state (it "arises only from the subject presented") not because of some subjective or affective process within the decision-maker. Of course, as discussed earlier, this initial criterionless choice must be then resolved with the active involvement of the decision-maker, which can trigger the second kind of indecision. Where indecision arises because of an "Apprehension about choosing badly" and an excessive desire to choose well, however, this is incongruent with virtue. In psychological terms, a precondition for maladaptive indecision is the presence of emotion, or "hot" cognitive processes. While this conclusion is set within Descartes' rather pessimistic view of emotions (Damasio, 1994), it is nevertheless consistent with a psychological approach to indecision which requires some causal conditions set within the experience and thwarted motivations of the decision-maker.

Specifically, Descartes refers to two sources of apprehension leading to indecision. It may be caused by information processing problems which lead to confusion or imprecision in judgment which only increases the uncertainty. This form of indecision can be absorbed within psychological models of judgment and decision-making. Alternatively and more interestingly, apprehension and indecision may have its origins in other functional motivations of the decision-maker, namely "too great a desire to do well". In the context of Descartes' ethic, doing well necessarily has multiple functional motivations. It of course includes achieving good substantive decision outcomes and achieving goals, as a good intuitive economist, but it also includes the value given to the performance and appearance of being a decision-maker.

This is evident when looking at Descartes' advice for overcoming irresolution caused by "passion", which is likely to be jarring to the modern audience. His counsel is to for decision-makers to be decisive in the midst of incompleteness and uncertainty, and even when the choice is quickly discovered to be incorrect in terms of substantive outcomes. This requires intention and practice: Descartes tells us to "accustom ourselves" to be decisive, a phrase which could also be translated as to "get into the habit" of being decisive and acting as if we were certain. This was a position that Descartes (1637/2008) adopted himself, as he reflected on in part 3 of his autobiographical treatise *Discourse on the Method*.

While this may appear to be sheer stubbornness, Blessing (2013) suggests that this is exactly Descartes' point, that good character requires persistence in decision-making based on good judgment at the time that the decision was made. Virtue, after all, was formed through habit, observation and experience, and virtue for Descartes meant a confidence in one's own judgment, including as a decision-maker. Having this capacity, and exercising it actively and vigorously but without undue concern for how one appears, is more important than whether or not those choices lead to immediately good or bad outcomes.

Impatience and Dread

Fast-forward to the turn of the twentieth century, where Descartes would likely have disapproved of William James' decision-making strategy. James was himself a highly indecisive person. Menand (2001) provides a number of illuminating examples, including this tale about James' academic career:

> In 1903 he began the process of trying to decide whether to retire. His diary for the fall of 1905 reads: October 26, "Resign!"; October 28, "Resign!!!"; November 4, "Resign?"; November 7, "Resign!"; November 8, "Don't resign"; November 9, "Resign!"; November 16, "*Don't* resign!"; November 23, "Resign"; December 7, "Don't resign"; December 9, "Teach here next year." He retired in 1907 (pp. 75–76).

James seems to have adopted the part of Descartes' advice about being decisive, but not the part about being confident and resolute in one's decisions. Yet, as Menand (2001) explains, this pattern of unstable decisions was also grounded in an attempt to pursue character and virtue:

> James believed that a risk-assuming decisiveness — betting on an alternative even before all the evidence is in — was a supreme mark of character. … But he also thought that certainty was moral death, and he hated to foreclose anything. His solution to this problem [of indecision] in his own life was to cultivate a self-conscious impulsivity. He would act decisively, and then, just as decisively, change his mind (p. 75).

In doing so, James introduces a new perspective in understanding experience of decision-making. Not only can indecision lead to death, but so can the certainty brought out by the finality of a decision. In his *Principles of Psychology*, James expands on this conflict within the decision-maker, but not before writing pointedly about the dangers of unbridled indecision (Pawelski, 2007). James (1890) names indecision directly, calling it a "peculiar feeling of inward unrest", which is "too familiar to need description" (Vol. 2, p. 528). Perhaps he was thinking of himself, as he had previously declared that:

> There is no more miserable human being than one in whom nothing is habitual but indecision, and for whom the lighting of every cigar, the drinking of every cup, the time of rising and going to bed every day, and the beginning of every bit of work, are subjects of express volitional deliberation (Vol. 1, p. 122).

Despite its inconsistency with his own life, the picture James (1890) paints of indecision is one which attracts pathos. It is an undesirable state of being even without taking into account the decisional consequences. James goes onto explain the phenomenon of indecision by introducing two opposing dynamic forces within the decision-maker which are common to all decisions. Consistent with his functionalist approach to psychology, James calls these reinforcing and inhibiting processes the "*reasons* or *motives* by which the decision is brought about" (Vol. 2, p. 528) or is otherwise impeded.

The first motive is the "impatience of the deliberative state", in response to which the decision-maker seeks "to relieve the tension of doubt and hesitancy" (Vol. 2, pp. 529–530) by resolving the decision. This is a drive towards a conclusive decision, even impulsiveness, because the presence of the decision and the role of being the decision-maker is itself aversive. Opposing this motive towards decisive action is the "dread of the irrevocable". This inhibitory process is the "not yet" to the response to the impatient "now" (Vol 2., p. 530). This motivation to keep the decision open

accompanies the irreversibility that is present in any decision, even if there is the possibility to change one's mind. The decision-maker has still taken action: something which carries with it substantial responsibility and meaning beyond the attainment of substantive goals.

James (1890) therefore nudges the philosophical discussion about indecision closer to the psychological. This conceptualisation of indecision as part of a dynamic conflict within the decision-maker is lost in much of the later psychological literature on both decision difficulty and JDM, although it re-emerges in contemporary philosophical perspectives on decision-making. It is an approach which requires revisiting in a psychological inquiry of indecision and indecisiveness. James' conceptualisation recognises not only that indecision and decision-making are related experiential processes, but they can be subject to personal rationalisation and social influence. This is similar to the position reached by Janis & Mann (1977) just under a century later.

The Cost of Indecision

The theme that indecision is a personal weakness or a failure of character extends beyond the philosophical and early psychological literature, making its way into common discourse in the late nineteenth and early twentieth century (e.g., Walton, 1908). However, there is a marked change in tone as to why indecision is considered problematic. Consider this excerpt from a very popular American advice book written by Marion Sayle Taylor in 1934 under his *nom de plume* "The Voice of Experience":

> Indecision and procrastination are among the most human of human weaknesses. And yet, just because they are not dangerous in themselves, nor against the law of the land, more unhappiness has been cause by dalliance of this kind than actual crime or wrongdoing. … It would be a conservative estimate to say that every day, literally, billions of dollars are lost through the inability of human beings to face facts and make decisions (The Voice of Experience, 1934, pp. 338–339).

The reference to the economic cost of indecision, although simultaneously flippant and needing to be adjusted for inflation, is very significant. Quantifying the costs of indecision changes the focal point away from the character and experience of the decision-maker to the foreseeable negative consequences of not deciding or not deciding in a timely manner. Indecision is now a problem not just because it interferes

with the capacity to deliberate and reach good outcomes, but because it leads to calculable losses — lost opportunities, lost efficiency, lost time, lost outcomes (Anderson, 2003). It may be impossible for Buridan's Ass to starve, but the cost of delaying a commercial transaction, for example, are very real. In other words, it is only at this late juncture in the history of decision difficulty that the language of consequentialism and the intuitive economist really begins to emerge. At the same time, as William James recognised, the various costs of indecision are only one side of the coin. The costs of deciding and being decisive are also substantial, as accordingly is the potential for conflict between the motivations of the decision-maker.

Career Indecision

The concern about the costs of indecision is reflected in the attention given to career indecision. This refers to the difficulties experienced by people — particularly adolescents and young adults — in making career-related choices (Crites, 1969; Osipow, 1999; Germeijs & de Beck, 2003; Prideaux & Creed, 2001). In terms of research activity, career indecision has since eclipsed the general (non-domain-specific) psychological research on decision difficulty, as well as clinical psychological research in this area.

Career indecision has been of interest to educational and vocational psychologists since the second half of the twentieth century, with the topic emerging and flourishing with the significant societal changes in post-war Western societies, particularly North America. The renewed liberal-democratic cultural ideology of autonomous choice and self-determination naturally influenced the possibility and significance of choosing a vocation. This then shone the spotlight on those for whom this now-critical developmental juncture was difficult or took longer than "normal" (Guichard, 2009; Arthy, 1997; Salecl, 2010).

The career indecision literature has examined a wide range of psychological predictors, such as attachment style (Wolfe & Betz, 2004), anxiety (Fuqua, Newman, & Seaworth, 1988) and broader personality traits (Saka, Gati, & Kelly, 2008). In doing so, the career indecision literature has more to say about the decision-maker than the narrow consequentialism of most decision-making research. However, the underlying assumption is that the inability to choose a career path is undesirable and inefficient both at the personal and socioeconomic level (Fuqua & Hartman, 1983; Feldman, 2003).

Understanding career indecision is therefore aimed at preventing it from occurring in the first place, or devising effective strategies to guide affected individuals

towards better vocational choices if it is detected. This project is helped along because the expected gains and losses of career choice or non-choice can be easily estimated, and the underlying objectives of maximising the outcomes for both the individual and for society can be turned into to concrete interventions. Unsurprisingly, indecision has become a topic of interest not only in the selection of careers but in the workplace for much the same reasons (Charan, 2001; Brooks, 2011).

Critical voices against the pathologisation of career indecision have been few and far between. John Krumboltz (1992), the eminent career psychologist, was one exception, writing about the unhelpful social pressure to avoid being "undecided" in terms of careers. Even young children are expected to give a quick answer ("an astronaut!") when asked about what they want to be when they grow up. Any decisive answer, no matter how unrealistic, is praised. Saying "I don't know", on the other hand, is not only frowned upon but taken as a nascent indicator of pathology even if it is the most truthful answer. Krumboltz (1992) concludes by saying that keeping one's options open and undecided should be considered a virtue when exercised properly. This is sage advice for any decision-maker experiencing the social pressure of being a competent and decisive decision-maker under conditions of abundant choice but significant uncertainty.

The Freedom and Tyranny of Choice

The increasing concern about avoiding the costs of indecision represents only one part of a profound sociocultural change in how decision-making is valued and what expectations are placed on decision-makers. The sociologist Renata Salecl (2009, 2010) writes about the development of a choice-based culture in twentieth-century Western societies. Not only were career decisions or economic decisions tied to increasingly weighty outcomes, but this period of time brought about an accelerating abundance and salience of choice in all areas of society. In addition to the explosion of consumer choices, decisions about relationships, education, appearance, health, identities, ideologies, travel and migration and the use of discretionary time are available to be made, sometimes for the first time for those who were previously disenfranchised from such choices (Salecl, 2009).

Western society thrives on this idea of the availability of choice. There is popular acceptance of the economic maxim that unfettered choice leads to higher utility than constrained choice (Kelman, 1979; Waldfogel, 1993; cf. Jeong & Drolet, 2016). There is still a sense that identity and character is developed through choices, but unlike

the aretaic philosophers, there is a radically consequentialist spin attached. Rather than the primary emphasis on choices as a way of expressing and practising virtue, as well as attaining some good, the substantive outcomes of choice are now the object of attention. Salecl (2010) presents a cogent argument that the unstated mission of many people is a task of self-invention. Life is a series of decisions which need to be made carefully in order to maximise outcomes, and thus, happiness and self-fulfilment (Kahneman, 2000; Hsee & Hastie, 2006). The freedom of identity and personal expression is attained through the substantive consequence of choices (Bellah et al., 1985).

This value on decisiveness and action has elements of a personal restlessness to make good decisions but also reflects a sociocultural ideology that seeks to attain yet unrealised ambitions. The heart of this approach is reflected by Archibald MacLeish (1952), the American poet, writer and Librarian of Congress. MacLeish warned his readers against becoming like Buridan's Ass, which was not just a philosophical absurdity but an ever-present reality of indecision and inaction. "Starvation in the midst of plenty is not a paradox. It is a declaration of moral and intellectual bankruptcy" (MacLeish, 1952, p. 19), he wrote, before pointing out that:

> The whole idea of the inevitable has been repugnant to us. Nothing, we have opined, is inevitable but death and taxes. … Our confidence, in brief, was in the future. Which is to say that our confidence was in the power of human choice to make the future. We considered that a free people can make the future for itself: master its destiny (pp. 128–129).

In MacLeish's vision, it is not the irrevocability of the inevitable which is a source of anxiety, but the undesirability of falling into the status quo. This can only be repelled by decisive choice. Such choice also facilitates collective purpose and identity, with MacLeish's comments resonating with the foundations of American exceptionalism and pragmatism. A failure of choice — indecision — therefore, is morally repugnant not just assessed against personal virtue, but against the social consequences of lost potential and possibility.

Yet there is a shadow side to choice. In the introduction, Dr. Seuss (1990) was quoted in his now-classic story, *Oh, the Places You'll Go!*, as acknowledging the difficulties of being a "mind-maker-upper". Yet this realisation only sets in after the importance of decision-making agency is affirmed as a core part of mature life. It is this capacity to choose which empowers the reader (presumably a young person, but not

always) to live out life as a quest of diachronic decision-making under conditions of uncertainty:

> You have brains in your head.
> You have feet in your shoes.
> You can steer yourself any direction you choose.
> You're on your own. And you know what you know.
> And YOU are the guy who'll decide where to go (p. 2).

Choice, as an individual right, is balanced here by deep personal responsibility, risk, difficulty, even loneliness on the journey of life ("All Alone! / Whether you like it or not, / Alone will be something / you'll be quite a lot", p. 34). For all its motivational levity, this work contains a sobering reminder that decision-making is fraught with challenges which sometimes feel overwhelming. The directness of the second-person-singular language, ironically, creates the impression that such choice is, ironically, not optional but rather mandated. While positive outcomes are likely still to occur (with *Pr*(success) = .9875), coming to terms with the joys and sorrows of the adventure of choosing is the most important part of the journey.

That choosing also means missing out comes through in a memorable quote in the poet Sylvia Plath's (1963) semi-autobiographical work *The Bell Jar*. Here, Plath describes with rich imagery the process of choosing between possible narrative identities and future selves which were "branching out before me like [a] green fig tree" (p. 72):

> I saw myself sitting in the crotch of this fig tree, starving to death, just because I couldn't make up my mind which of the figs I would choose. I wanted each and every one of them, but choosing one meant losing all the rest, and, as I sat there, unable to decide, the figs began to wrinkle and go black, and, one by one, they plopped to the ground at my feet (pp. 72–73).

There are more than faint echoes of Buridan's Ass (or, more closely, Al-Ghazali's dates) in this depiction of choice and its difficulty. Observe that the choice Plath describes is no longer between discrete, well-defined objects, like two bales of hay or pieces of fruit. Instead, each choice contained the complexities and ambiguities of "a wonderful future [which] beckoned and winked" (p. 72), but each choice was also

exclusive. Indecision is death, but just as William James also believed, each decision means the death of other possibilities.

Renowned existential psychotherapist Irvin Yalom (1989) writes that decision "inevitably involves renunciation" (p. xviii), pointing out that the root of the word "decide" means "to slay", similar to other derivate words *homicide* or *suicide*). Etymologically, Yalom is not quite correct. The Latin roots of "decide" come from the verb *caedere* (to cut off) rather than *cidere* (to kill), but the same source of angst and responsibility remains.

The idea of choice can be overvalued, especially when the kind of choice promoted is predicated on an unbounded utility-maximising model which makes implicit promises about the possibilities of attaining positive outcomes. This downside to choice, however, cannot be considered purely as a by-product of narcissistic consumerism. It also reflects an epistemological outlook which promotes a worldview of certainty and knowledge attained through choice and decision. Uncertainty in the form of indecision is perceived as an "internal war" (Smithson, 2008, p. 18), and from the outside in, it tends to be attributed to the person as a flaw of character or a shirking of responsibility.

However, it is likely that the opposite can also be true: that uncertainty and indecision can also be good for crafting good outcomes (Smithson, 2008). The uncertainty of irresolution can create the conditions for change and provide time for creativity, hope and wonder (Cohen & Ferrari, 2010; Partnoy, 2012; Rubenstein, 2008; Glenn, 2001). Even brief decisional delays for perceptual choices may provide just enough time to sort the signal from the noise, enhancing overall accuracy of judgments (Teichert, Ferrera, & Grinband, 2014). Resisting determinism arises not only through stubborn or impulsive decisiveness but also through considered and sometimes hesitant action. Such decision-making can be deliberate, demanding, difficult or "irrational", but nonetheless positive in terms of outcomes or process.

So, despite MacLeish's optimistic rhetoric, choice is not necessarily freedom. For Salecl (2010) and Schwartz (2004, 2010), choice can bring the opposite of freedom: tyranny. Underneath the allure of self-determination, achievement and acquisition, there is a deep conflict between the valuing of the idea of choice and the difficulty or anxiety of choosing. Amidst the dominance of outcome-oriented models of decision-making, recognising this "paradox of choice" provides a countervailing view which places attention back on the act and meaning of choosing and being a decision-maker. Choice itself, we are reminded, is difficult, paralysing, deceptive and sometimes illusory.

More choice is not necessarily better choice. Studies on the "too much choice" effect, showing that more choice can sometimes lead to worse outcomes or indecision behaviour (see Chapter 2), are an example of this discrepancy between choice as ideal and choice as experience.

Inevitability and Undecidability

Despite the potential tyranny of choice, decision-making is inescapable. Jean-Paul Sartre (1946/2007) noted that we deceive ourselves if we believe that we can opt out of choice. Choosing not to choose is nonetheless still a choice, and choice is necessary if we are to have freedom and agency. However, choosing not to choose is not indecision. It may actually be a decisive stance about decision-making itself. Cass Sunstein (2015), for instance, suggests that with appropriate default rules and choice architecture, opting out of active choice may be an adaptive response to the increasing burdens of decision-making. However, the salience of these meta-choices point even more to the inevitability of choice, creating spaces for further indecision based on the apprehension of choosing whether to choose.

The formidable twentieth century philosopher Jacques Derrida takes this a step further. Not only is choice inevitable, but indecision is unavoidable and even necessary as part of every decision. Derrida (1988) rejects the assumption that decision can be reduced to mere calculation. This is not decision-making at all, but in the absence of the possibility and experience of choice by a person, it is rather the "unthinking execution of a program" (Rubenstein, 2008, pp. 137–138).

For decision-making to be decision-making, the decision-maker reaches a precipice which leads to an experiential interruption or suspension of the known. For Derrida, the act of deciding is qualitatively distinct from the informational and substantive basis of the decision problem; it "remains heterogeneous to the calculations, knowledge, science, and consciousness that nonetheless condition it" (Rubenstein, 2008, p. 145). Derrida terms this as the *undecidability* of decisions. This undecidability is not the logical impossibility of choosing between options, as the term is used by Smithson (1989, 2008). It is the recognition that there is a leap between the rational consideration of information and outcomes and the unknowability of being the person to make *this* particular decision real.

Such undecidability is deeply felt and experienced. Derrida writes that "[e]ven if a decision seems to take a second and not to be preceded by any deliberation, it is structured by this *experience and experiment of the undecidable*." (Derrida, 1988, p.

116). While this is not a falsifiable empirical claim, it speaks to an aspect of decision-making rarely captured in the psychology of decision-making. Being the decision-maker unleashes a creative or destructive force; the decision changes both the substantive state of the world in the outcomes of choice and also the decision-maker themselves through the act of choosing. Neither are completely predictable. As such, Derrida (1978) borrows Kierkegaard's observation that "the instant of decision is madness" (Bennington, 2011).

Far away from the philosophical discourse, this simultaneous inevitability and tyranny of choice and its effects on indecision has received some attention in the organisational context. Denis, Dompierre, Langley, & Rouleau (2010) provided some valuable preliminary insights into how employees within an organisation experience and resolve this tension between valuing the availability of choice and being oppressed by the demands of choosing. In their theory of escalating indecision, indecision is a collective pathology driven by conflicting motivations between the desire for concrete and complete decisions (i.e., those which are irreversible and well-defined) on one hand, and a tendency to prefer the status quo over the threatening possibilities of making decisions, on the other. This is expressed in two processes: *reification*, which is the assigning of symbolic value to decisions to confer legitimacy and permanence on them, and *strategic ambiguity*, which dilutes decisions through equivocation, delay and bureaucracy. The latter also entails introducing vagueness and removing specificity in order to make decisions acceptable and less threatening.

The result for the organisation is a "network of indecision": behaviour that looks like decisive action but which also resists any change. Indecision may be actively sought after even at the same time as decisiveness is extolled. The outwardly-endorsed norm of decisiveness is met with subtle resistance when decision-makers have skin in the game and are faced with the experience of undecidability. This practice of escalating indecision shows that the demands and difficulty of deciding are not just absorbed by decision-makers. They find expression in forms of indecision which are functional, even if they may also be maladaptive at another level. However, these aspects of decision difficulty only become apparent once we look beyond substantive decisional outcomes and return to the decision-maker.

This is Beyond WEIRD

The preceding discussion shows that decision difficulty — if it is seen as part of the psychological activity of decision-making — is an inherently social construct. The

activity of deciding takes place with reference to norms, schema and social feedback about how a decision-maker ought to act. Decisiveness is therefore idealised and outward behaviours which betray indecision or indecisiveness are avoided, and decision-making becomes a source of stress and aversion. However, if decision difficulty has such a strong social basis, there is a further question about the extent to which it is culturally and historically bound (Arthy, 1997; Gergen, 1973).

Take, for example, the writings of Lin Yutang, an early twentieth-century Chinese philosopher and writer. Lin was in a unique position to comment on interbellum American society, comparing it with his experience of the tail end of dynastic Chinese society. In the same year that the American action-oriented advice collection *The Voice of Experience* was published, Lin (1934/1998) wrote, cheekily, about the virtue of inaction and irresolution: "Besides the noble art of getting things done, there is a nobler art of leaving things undone" (p. 161).

While not directly speaking about choice and indecision, Lin provides an alternative set of values held by a decision-maker than the moral and social virtues of action, agency and decisiveness. Character, in Lin's view, would be better cultivated by having a liberal amount of inaction and irresolution. Lin extols the benefits of an avoidant approach to decision-making, in which delays, deferrals and delegations are not only tolerated but actively sought after. In this context, the pressure on decision-makers to be seen to be competent and decisive in their search of good outcomes would be, literally, foreign. This contrast attests again that decision-making is not a value-neutral activity (Beattie et al., 1994). The attitudes which shape how decision-making is entered into are themselves influenced by factors far beyond the immediate choice configuration, including culture and social norms.

It is already difficult to disentangle the extent to which theories of decision-making describe cultural practices from the extent to which they prescribe and reinforce such cultural norms and values. The problem is exacerbated in the psychological research on decision-making, where empirical findings are almost always WEIRD. That is, they are mostly obtained from studies which exclusively use participants from Westernised, Educated, Industrial, Rich and Democratic societies (Heinrich, Heine, & Norenzayan, 2010). Making global generalisations from such a selective sample is not without significant risks to validity.

WEIRD data have been used to show that people more or less behave in a consequentialist way, driven by the dominant functionalist motivation to maximise utility in substantive outcomes. The social legitimacy of these models mean that they

are inevitably internalised by decision-makers, who strive to be decisive and are sensitive to appearing indecisive and like the idea of choice even if they struggle with choosing. In short, a WEIRD feedback loop between decision-making standards and everyday praxis can affect the very bases of indecision.

These assumptions may be far less robust than they appear, even at the most foundational level. Cultural differences have been observed in whether an action is construed to be a "choice". Iyengar & Lepper (1999), for example, asked American and Japanese students residing in Kyoto to catalogue the number of choices they had on a normal school day. American students, who had only recently arrived in the country, reported having almost 50% more choice available to them than Japanese students. Iyengar and DeVoe (2003) later reviewed a wide range of other evidence that suggests that decision-makers perceive that they have less choice where choosing is reflective of duty, rather than free volition. These perceptions are heavily influenced by culture.

Savani, Markus, Naidu, Kmuar, & Berlia (2010) similarly found that Indian students were less likely to construe their own and others' behaviours as choices, compared with North American students. However, Indian participants were more likely to construe interpersonal actions as choices than purely personal actions, whereas American participants were equally likely to report any kind of action as a choice. Savani et al. (2010) conclude that this is reflective of a conjoint rather than disjoint model of agency, which is about personal expression and instead being responsible to social roles and situations. As such, there is good reason to question whether the dominant Western functionalist objective of maximising availability of choice, and then maximising outcomes of choice, is particularly normative, let alone generalisable across cultures. The results of these studies also suggest that at least the appraisal of behaviour as a choice is necessary as a precursor for indecision.

Specifically in terms of decision difficulty, Yates et al. (2010) showed that there are stable differences in cultural norms towards indecision and indecisiveness. In their study, Japanese participants (but not Chinese participants) showed significantly higher levels of indecisiveness than stereotypically decisive North American students. This was measured on Frost & Shows' (1993) Indecisiveness Scale (IS) which is explored in more detail in Chapter 2. Yates et al. (2010) also found evidence for cultural variation in the extent to which indecisiveness is seen as a negative or positive personal attribute. The higher base rate of indecisiveness in the Japanese culture was associated with its perception as a positive personal characteristic, compared with its negative social status in Western culture.

Cultural differences in indecisiveness are also observed at a more fine-grained psychometric level. Patalano & Wengrovitz (2006), for example, found that a two-factor model of indecisiveness (decision-making ability and planning indecisiveness) on the IS was sufficient for a US sample. However, a three-factor model was a better fit for Chinese participants, with a separation in the decision-making ability factor to two factors, anxiety and confidence, together with planning indecisiveness.

While there are some differences in the factor structures obtained with different populations (e.g., Swami et al., 2008; Tien, 2005), these differences are consistent with the suggestion that there are systemic cultural differences in the appraisals or cognitive strategies relating to decision-making which affect decision difficulty (Nisbett, Peng, Choi, & Norenzayan, 2001).

One promising explanation is that the effect of culture on indecisiveness is mediated by naïve dialecticism. Naïve dialecticism is a lay epistemological position which has particular dominance in East Asian cultures (Spencer-Rodgers et al., 2009; Hui, Fok, & Bond, 2009). It is characterised by an awareness of contradictions or dialectics; that incompatible or opposing states can co-exist simultaneously. People with a dialectical mode of thought are less inclined to resolve apparent contradictions and have a greater tendency to hold ambivalent attitudes. This directly affects decision-making, since choice inevitably involves closing off possibilities and slicing through ambiguity. It follows then that not only is naïve dialecticism associated with greater reluctance to decide at all, but also high levels of discomfort and indecision when a person is required to be the decision-maker. Several studies have found that cultural difference in indecisiveness (at least between Asian and Western culture) can be explained by the levels of naïve dialecticism (Li, Masuda & Russell, 2014; Ng & Hynie, 2014, 2016).

Together, these findings further challenge the assumption that there can be a fixed set of expressions or antecedents of indecision. The cross-cultural research reinforces the need to understand the functionalist motivations of the decision-maker, as well as individual differences and situational demands. Any psychological theory of indecision cannot reduce indecision to the difficulty of evaluating available choices if it is to be valid beyond very confined parameters.

Having said all of this, the empirical work advanced in this thesis admittedly relies on WEIRD participants. Practical limitations meant that recruitment was conducted from Australia directed at mostly Australian participants, although there was significant cultural diversity in each of the samples. The initial psychometrically-

oriented study also accounted for individual differences in dialectical thought, while the other two behavioural studies did not only use common consequentialist choice paradigms in an attempt to look at other aspects of the decision-making experience. Nonetheless, there is ample scope for future cross-cultural investigation, not just to compare different sociocultural expressions of indecision but to understand both the distinctive and common threads of being a decision-maker.

Ahead

This chapter set out to find a way of situating a psychological approach to decision difficulty. This required challenging the assumption that the outcome-oriented way of characterising and evaluating decision-making is complete, psychologically sound or even particularly normative when applied to decision difficulty. The position so engrained in the JDM discourse is relatively new and by no means universal. It is by no means the only way to study indecision and indecisiveness. The philosophical literature, as well as sociocultural observations from just the past century, show that there is at least a psychologically meaningful distinction between good decisions (evaluated by their outcomes) and good deciding (evaluated by the process). Different motivations can be applied to decision-making which also influence indecision and indecisiveness. Only with this in mind can we now begin to move towards constructing a psychological model of indecision and indecisiveness.

CHAPTER 2:
THEORY AND MEASUREMENT: A CRITICAL REVIEW

After the interdisciplinary exploration of different ways of conceptualising decisions and decision difficulty in the previous chapter, this chapter returns to the core of decision difficulty with a critical evaluation of the psychological literature. Chapter 1 deferred defining indecision and indecisiveness until an appropriate metatheoretical framework could be found, but problems of classification and description were difficult to avoid. While these issues are often unresolved in the literature, they need to be confronted directly. As such, an intentionally negative approach is taken here, critically evaluating the literature against a set of common theoretical problems which constrain the interpretability and generalisability of the findings.

To be clear, this review is not intended to be a polemic which ignores the many sound and useful contributions which have been made. Rather, the task is to identify problems common to the research on decision difficulty. Fundamental inconsistencies in defining and measuring basic concepts suggests that there is still a lack of a comprehensive psychological theory of indecision and indecisiveness. The tensions between a narrow instrumentally rational view of decision-making on one hand and a functionally pluralist approach on the other may be one reason why the development of a workable psychological theory of decision difficulty has been stuck in its infancy. A structured dismantling of the literature is therefore necessary before moving to a positive approach in the next chapter, where a new model of indecision and indecisiveness will be proposed.

Decision Difficulty and Surrogates for Theories

Gigerenzer (1998) makes a bold but defensible contention that many supposed theories in the psychological literature, with particular reference to JDM research, are not theories at all, but "surrogates for theories". What such ersatz theories have in common are that they are "vague, imprecise, and/or practically unfalsifiable, that they often boil down to common sense and lack boldness and surprise" (p. 2). Gigerenzer (1998) identifies four kinds of theory surrogates:

1. *One-word explanations*: broad ambit terms with no clear definitions or underlying mechanisms;

2. *Muddy dichotomies*: contrasting one construct with another based on false or vague binary comparisons;
3. *Redescription*: circular reasoning where the explanation is merely another way of stating the problem; and
4. *Data fitting*: improper use of statistical tools and techniques in a way that stretches data to fit a theory, rather than testing the data against a theory.

The first part of this chapter applies these four categories as a guiding framework with which to evaluate the literature on indecision and indecisiveness.

One-Word Explanations

It has already been foreshadowed that the decision difficulty literature is replete with imprecision in nomenclature and taxonomy. There has been tremendous difficulty in trying to define "indecision" and "indecisiveness". This is why an inclusive working category of "decision difficulty" has been used so far, not as a term of art but merely as a temporary container to capture the spectrum of possible meanings.

It is not disputed that indecision and indecisiveness are difficult concepts to define. Problems arise, however, when the labels are used inconsistently and as an ambit term which masks the extent of the variability in causes, underlying processes and expressions. The surrogate for theory of one-word explanations means that "indecision" and "indecisiveness" are used uncritically and over-inclusively.

These problems are exacerbated when theoretical claims are made based on imprecise definitions, which only perpetuate further imprecision. An absence of clear definitions, boundary conditions and proposed mechanisms makes it difficult for the same construct to be compared across different studies. Instead, rather than striving towards conceptual and theoretical clarity, there is a sense in which meaning is endlessly deferred, not unlike the phenomenon of escalating indecision described in Chapter 1 (Denis et al., 2010).

This problem is seen very clearly in reviews of the literature on decision difficulty. A common starting point is to begin with an unstructured list of all possible antecedents, behaviours, emotions and appraisals which relate to decision difficulty. After reviewing other scales of indecisiveness, Germeijs & De Boeck (2002) identified seven qualities of decision difficulty for the purposes of developing their new and "pure" indecisiveness scale (pp. 114–115):

1. Deciding takes a long time;
2. A tendency to delay making decisions;
3. A tendency to avoid making decisions;
4. Leaving decisions to someone else;
5. Instability of a decision;
6. Worrying about decisions that are made; and
7. Regretting decisions that are made.

The descriptors of decision difficulty in this list are mainly objective and behavioural (e.g., delay, deferral and instability) with only the last two items referring to post-decisional processes (counterfactual thinking and regret). Germeijs & De Boeck (2002) also seem to differentiate between aspects of decision difficulty which are a "tendency" to delay or avoid making decisions, and actual instances of behaviour such as decision instability or deferral. Whether or not this is an intentional distinction is unclear, although it illustrates the tension between looking at decision difficulty as a frequentative or probabilistic pattern of behaviour, or as a specific set of behaviours or experiences. Regardless, the list of descriptors bundles together a wide range of decision-making processes into one construct.

In his comprehensive later review, Rassin (2007, p. 3) restated the indicators of decision difficulty identified by Germeijs & De Boeck (2002). However, the list grew from seven to eleven items, adding the following four characteristics:

- Deciding is perceived as difficult;
- Not knowing how to decide;
- Feeling uncertain during deciding; and
- Simply calling oneself indecisive.

These items add a new experiential dimension to decision difficulty. In this description, *perceptions* of decision difficulty are included amongst objective indicators of difficulty. The decision-maker's subjective experience of not knowing how to decide or feeling uncertain in the moment is also recognised as important. Moreover, the idea that indecisiveness can be part of a person's identity is introduced for the first time, although it is not given any further attention. Although Rassin (2007) purported merely to reaffirm Germeijs & De Boeck's (2002) list of descriptors, in reality a wider spectrum of decision difficulty is being identified. The language of "tendency" is also

omitted to focus on instantaneous behaviour, rather than identified patterns over time. While this is a positive development, the use of one word to describe an increasingly unwieldy set of behaviours, experiences and identities is also fraught with danger.

Following the same tradition of defining decision difficulty by a process of cataloguing, Potworowski (2010, p. 13) derived ten features of decisional difficulty from the literature:

1. Prolonged decision latency (in deciding or implementing decisions);
2. Putting off decisions (e.g., decisional procrastination, strategic waiting);
3. *Aversion to decision responsibility (e.g., buck-passing);*
4. *Inability to decide;*
5. Difficulty deciding;
6. *Decision impasse while experiencing negative affect;*
7. *Experience of negative decision-related emotions before, during, and after deciding (e.g., anxiety, doubt, stress, frustration, confusion);*
8. Fear of commitment;
9. Decisional regret; and
10. Unstable/changing commitments.

Items which are not found in Rassin's (2007) and Germeijs & De Boeck's (2002) lists are italicised above. While capturing the essence of these previous lists, Potworowski (2010) places a greater emphasis on immediate negative affect (items 6 and 7) and responsibility (items 3 and 8). On the objective, behavioural side, Potworowski (2010) also identifies the criterion of not being able to decide (i.e., the absence of a terminal decision), as another aspect of decision difficulty.

Once again, the items run the gamut of pre-decisional (items 2 and 7), peri-decisional (items 1, 3, 4, 5, 7 and 8) and post-decisional (items 7, 9 and 10) processes. There is also a distinction between outward behaviours and manifestations of decisional difficulty (e.g., items 1, 2 and 10) and subjective or identity-salient aspects of the phenomenon on the other hand (e.g., items 3, 5, 6, 7, 8 and 9). Potworowski (2010) acknowledges that this list could easily be restructured, observing that some items could be arranged in a hierarchy, while others could be rearranged according to their causal or temporal characteristics.

Moreover, Potworowski (2010) suggests that the imprecision and lack of internal consistency of the items is representative of the inability of researchers to define the scope of decisional difficulty. Rassin (2007) made a similar observation:

> Whereas these descriptors deliver a substantive view of what indecisiveness is, they can hardly be construed as a clear definition. … Indeed, a solid definition of indecisiveness does not exist in scientific literature (p. 3).

One-word labels such as "indecisiveness" and "indecision" have therefore created a default assumption of unidimensionality. For instance, referring to indecisiveness presumes that there is only one kind of indecisiveness. Nonetheless, the use of such descriptive lists can be helpful, if only to highlight the difficult task of constructing a testable model which includes such diverse features.

Less helpful is the tendency for "definitional creep" by the same authors while deferring consideration of whether these different features have different or competing functional bases. This is despite the widespread recognition that a one-factor model is highly unlikely to be the best way to explain indecisiveness, if not also indecision (Spunt, Rassin, & Epstein, 2009; Germeijs & De Boeck, 2002; Crites, 1969; Tyler, 1969).

Muddy (Vague) Dichotomies

Beyond imprecise one-word explanations, burrogates for theory about decision difficulty often take the form of imprecise two-category explanations. Chapter 1 has already discussed, in passing, the need to maintain a clear distinction between "decision" and "indecision". However, the dichotomy between indecision and indecisiveness is far more readily and unjustifiably misused. This is despite there being a tacit consensus that the terms designate two different levels of related constructs.

Indecision and indecisiveness. Indecisiveness in the literature generally refers to a dispositional (trait-level) tendency to have difficulty making decisions, while indecision is the immediate state of experiencing difficulty making a particular decision. However, dividing decision difficulty into these two constructs has not been handled in a consistent way. For instance, the term "decisional procrastination" is sometimes used to refer to indecision (e.g., Mann, 1982), while "chronic indecision" is sometimes used instead of indecisiveness (e.g., Ferrari & Dovidio, 2000). In other cases, "indecisiveness" and "indecision" are sometimes used to mean the opposite of what is

generally understood (e.g., Elaydi, 2006). Other examples of varying usage are shown in Table 2.1.

The more serious problem is that the difference between indecisiveness and indecision has not generally been used in a theoretically meaningful way. Firstly, indecisiveness is sometimes used to refer to difficulty making decisions in general, contrasted with indecision as decision difficulty within a specific domain (typically career decisions). In this conceptualisation, there is a hint that indecisiveness is a general, cross-domain trait, but the relationship between indecisiveness and indecision is not specified. Often, the subject-matter of the decision is used as an artificial way to mark out indecision within a certain domain as a distinct phenomenon. This can be further complicated, for instance, where indecisiveness (as general decision-making difficulty) is considered as a part of career indecision (e.g., Germeijs & De Boeck, 2002), which in effect creates an even more unhelpful trichotomy between career indecision, general indecision and general indecisiveness (e.g., Di Fabio, Palazzeschi, Asulin-Peretz, & Gati, 2013; Gati & Krausz, & Osipow, 1996). This taxonomic confusion is symptomatic of the absence of an integrating framework which is broad enough to incorporate both the generality and specificity of decision difficulty.

A second way in which the distinction has been applied relates to the phenomenology of indecision. Here, indecision is used to describe an experiential state of having difficulty in deciding. Such difficulty occurs in decisions across different domains, including consumer decision-making (Amir & Ariely, 2004) but ranging from everyday choices to the life-changing and difficult decisions. To this extent, it is inconsistent with the first view which states that indecision is necessarily caused by certain thematic or situational cues. However, this approach tends to leave indecisiveness as a purely derivative construct of the frequency of indecision, overlooking other individual differences and situational predictors. It also does not look at indecision as set against the multiple motivations of the decision-maker, but typically considers the aversive state of indecision as an obstacle to good outcomes.

Assumed unidimensionality. It is worth noticing, though, that the definitions of indecision and indecisiveness which emerge from these two competing frameworks, as shown in Table 2.1, are unidimensional. They assume that a monolithic concept of decision difficulty can encompass most, if not all, of the multiple attributes and indicators previously listed. As mentioned earlier, this is not so much that anyone subscribes to the illusion that indecisiveness or indecision are in fact unidimensional, but merely because the state of the theory does not allow for a more nuanced analysis of

their different components. The lack of theory at this basic level, as will be shown in the second part of this chapter, affects the way in which indecisiveness and indecision are measured, which in turn hinders the ability for further theoretical development.

Table 2.1

Contrasting and Conflicting Definitions of Indecision and Indecisiveness

Source	Definition of Indecisiveness	Definition of Indecision
Crites (1969)	Difficulty making any kind of decision, regardless of its importance.	Difficulty making decisions particularly in a professional context.
Chartrand et al. (1993)	Stems from personal problems or excessive anxiety.	Stems from a need for more information.
Osipow (1999)	A generalised trait manifesting as difficulty making decisions in any part of life.	Indecision is equated with career indecision. A state, part of the normal stage of human development, a process which tends to becomes more infrequent over the life span.
Germeijs & De Boeck (2002)	Chronic inability to make decisions which generalises across discussion situations.	Decisional problems in a specific context or domain
Savickas (2004)	Chronic indecision, attributable to high anxiety and a lack of problem-solving skills	Temporary inability to choose [a career], but with the potential to make decisions in the near future
Rassin et al. (2007)	Decision difficulties in virtually all possible areas of life.	Decision difficulties in one specific area (such as career planning).
Spunt et al. (2009)	A disposition to prefer avoidance and experience difficulties when making any decision, no matter the domain.	Avoiding a decision in a particular domain (e.g., career).
Yates et al. (2010)	Chronic experience of indecision beyond some norm (noting that	State in which person remains uncommitted to any particular

	definitions are ambiguous and multifaceted).	course of action despite having acknowledge the need for a commitment.
Di Fabio & Palazzeschi (2013) and Di Fabio et al. (2013)	A personal characteristic displayed in a chronic inability to make decisions in various contexts, stems from pervasive emotional and personality-related difficulties.	The emergence of problems during the career decision-making process; a normal developmental stage.

Note. Some items adapted from Di Fabio & Palazzeschi (2013).

On the other hand, other potentially theoretically meaningful ways of partitioning indecision have been overlooked by giving precedence to the muddy dichotomy between indecision and indecisiveness. Reed (1985), for instance, differentiated between *indecisiveness* and *inconclusiveness*. Indecisiveness, here, is equivalent to indecision as defined in this thesis: as a state, rather than a trait. However, this is not the focus of Reed's (1985) distinction. Indecisiveness (i.e., indecision) refers to objective behavioural outcomes of decision-making. It can be identified where behaviour (or verbal report) allows for a deduction that the person is unable to make a decision or is "unduly slow in so doing" (p. 177). Inconclusiveness, in contrast, is found not in overt behaviour and quantifiable outcomes, but through "inferences about the person's state of mind, the experience which underlies his failure to make a decision" (p. 177). For example, even if a decision has been made, inconclusiveness would mean that the person finds it difficult to accept that the decision has been resolved. Similarly, inconclusiveness could mean that a person makes a decision but defers its implementation or action, akin to procrastination. Behaviourally, there may be no sign that a decision has been made at all. This kind of dichotomy, which contrasts objective and subjective processes, requires a theoretical view which asserts that decisional outcomes are insufficient for the study of decision difficulty.

Milgram & Tenne (2000) made a related distinction between *difficulty* and *tension* in decision-making. Difficulty relates to the extent of deliberation and the amount of cognitive activity involved in reaching a decisional outcome. It is a function of the informational component of the decision problem, and as such, difficulty can be inferred from measures of time and effort expended in the decision-making activity. Tension, on the other hand, which is also described as discomfort, is the aversive

affective response that accompanies the decision-making process. Milgram & Tenne (2000) point out that while difficulty and tension often coincide, they are independent processes and can be dissociated. This suggests that indecision could at least be partitioned into processes relating to outcome-related cognitive difficulty and those within the immediate experience of the decision-maker, a position which is revisited in Chapter 3. As it stands, the contribution of these structures in delineating the boundaries and characteristics of indecision have been overshadowed by dichotomies which require no recourse to the subjective or motivational bases of decision-making.

Indecision and decision-making styles. Categories of decision-making style or approach can also be used in to account for indecision. While this can create problems of redescription (described below), attempting to create a typology of indecision in this way can mask the multiple antecedents and consequences of decision difficulty. For instance, Berzonsky & Ferrari (1996) promisingly looked at the relationship between decision-making styles and indecision. They applied their previously-developed way of categorising people as having an *information-oriented identity* or a *diffuse/avoidant identity* as a way of predicting decision-making style and behaviour. An information-oriented identity relates to an inclination to resolve conflicts and decisions by seeking out, evaluating and making use of information. A diffuse/avoidant identity, on the other hand, is reflected by a reluctance to face up to and deal with problems and decisions, resulting in emotion-focused coping, procrastination and decision instability.

Berzonsky & Ferrari (1996) found that people who were classified as having an information-oriented identity were more likely to endorse items relating to vigilant decision-making on Mann's (1982) Flinders Decision-Making Questionnaire (DMQ), indicating a tendency for careful, rational and thorough evaluation of decision alternatives. They also scored lower on the Procrastination subscale of the DMQ (also used on its own as the Decisional Procrastination Scale, which is discussed below). In other words, people who adopted a more outcome-oriented and instrumentalist decision-making strategy were also less inclined towards avoidant forms of indecision. Participants with avoidant/diffuse identity orientations showed the opposite pattern, reporting a greater propensity towards maladaptive decision strategies consistent with an avoidance of the responsibility and demands of being a decision-maker.

However, identity orientation scores in this study were originally measured on three independent dimensional scales but were then forced into a single categorical variable based on the highest score from the three scales. Only indecisiveness and not indecision was measured, using a narrow definition of indecisiveness as a tendency

towards decisional procrastination. There is accordingly a risk of misconstruing the results as supporting a false dichotomy between an adaptive and maladaptive decision style, even though this conclusion was reached primarily because of empirical convenience.

While such correlational studies are not uncommon and still have much merit, it is dangerous to conclude from this design that two categories of identity orientation satisfactorily account for indecision. What this study does show is that certain traits and cognitive orientations may predispose or insulate people against indecision caused by information processing or experience. The study also shows that the relationship between the act of decision-making and the formation and expression of self-identity is relevant to indecision. This is an issue which requires further exploration, and will be revisited in later chapters. For present purposes, care must be taken not to confuse state with trait, or experience of decision-making with the decision and therefore to attribute causation improperly. To blur these concepts also runs the risk of the next theory surrogate: redescription.

Redescription

Redescription, the third of Gigerenzer's (1998) surrogates for theories, is the tautological use of theory. Redescription occurs where the construct is explained in terms of the construct itself, only using a more abstract label. This is sometimes known as the "dormitive principle", named after a scene in Molière's (1673/2005) satire *The Imaginary Invalid* in which a group of physician supervisors assessing a hopefully soon-to-be doctor pose the question: *why does opium makes people sleepy?* The accepted response: because of its *virtus dormitiva* — its dormitive virtue. Another example is where aggressive behaviour is attributed to an aggressive disposition (Gigerenzer, 1998).[8] Redescription falsely promises explanations, when it is really pointing towards what needs to be explained but still has not been explained.

In the literature on decision difficulty, redescription is a problem which is often layered upon the deferral of meaning created by one-word descriptions or fuzzy dichotomies. Redescription in the form of circular reasoning occurs both within and between the constructs of indecisiveness and indecision. For example, indecision is often explained by reference to dispositional indecisiveness, but indecisiveness is

[8] Or as the bad joke goes, "Birthdays are good for you. Statistics show that the people who have the most live the longest."

identified through the experience of indecision. This circularity can be restated colloquially:

1. Why do you have difficulty making decisions? Because I'm indecisive.
2. Why are you indecisive? Because I have difficulty making decisions.

Indecision and indecisiveness are undoubtedly related, as Osipow (1999) points out when observing that "an indecisive person would of necessity display undecided behavior at many decision points during life" (p. 148). However, one does not fully explain the other. In particular, conceptualising indecisiveness as the frequency of indecision says very little about either construct.

Circular redescription is also found in Janis & Mann's (1977) explanation of the relationship between indecision and conflict. In their theory, the experience of decisional conflict (as stress) is a direct antecedent of indecision (as one of several maladaptive coping responses). However, indecision (as the inability to resolve a decision) could also be an antecedent of decisional stress. Conflict theory is silent about the causal and temporal relationship between these two constructs. Overt behavioural measures of indecision have their place, but they have limited explanatory power when used by themselves and should not be regarded as a substitute for the construct itself.

Therefore while Janis & Mann's (1977) model of decision-making takes into account more of the decision-maker's experience, the distinction between the stressor and the response can be unclear, especially in relation to dysregulated and aversive forms of indecision. While these are tricky issues to evaluate empirically, conflict theory for these reasons (in addition to those mentioned in Chapter 1) becomes insufficient to explain the nature of indecision itself.

Despite these criticisms, the willingness of Janis & Mann (1977) to venture into this thorny psychological territory is to be praised. One potential explanation for the prevalence of redescription is that the subsequent research on decision difficulty has not been willing to embrace psychological complexity. The minimal role afforded to the experience of the decision-maker and the motivations for deciding reduces the scope of indecision and indecisiveness to a very narrow set of considerations which are ripe for redescription.

Data Fitting

The final kind of theory surrogate identified by Gigerenzer (1998) is data fitting. This refers to situations where data are fitted to certain models using more complex statistical or mathematical methods than appropriate, and the results then presented as theory in the absence of a sound conceptual basis. This is perhaps the only category where literature on decision difficulty does not run into serious problem. It is, however, not immune from theoretical weakness of a related kind. Instead of data being overfitted to support a theory, the opposite situation is more common. Crude methods and analyses in the limited experimental literature on decision difficulty leads to theoretical claims being made based on an *underfitting* of data. Some of these have already been discussed in the other categories of theory surrogates. They include the arbitrary and destructive transformation of continuous data into categories, the use of measures which are either too broad, too narrow or mistakenly assume unidimensionality, and the reliance on confounded outcome measures as substitutes for the psychological construct. In all such cases, the weakened ability to draw meaningful conclusions from the data impairs the development of good psychological theory.

This kind of theory surrogate also builds on the other theory surrogates. To the extent that it is unclear what is being measured in relation to indecision and indecisiveness, then it follows that the measures used and results obtained are also limited in their probative value. These issues are revisited in the final part of this chapter by looking at the measurement of indecisiveness and indecision, which uncovers not only methodological limitations but further confusion about the underlying theory.

Rassin's (2007) Model of Indecision

Before addressing these measurement issues, it is worth noting that so far, the theoretical problems identified in the literature on decision difficulty are general weaknesses. Gigerenzer's (1998) surrogates for theory can apply to any psychological theory, but have been shown to be relevant to the literature on indecision and indecisiveness. Two points must be raised here.

Firstly, many of the studies reviewed so far in this chapter do not specifically set out to develop or test a theory of indecision or indecisiveness. While there are weaknesses in how these concepts are used, the primary purpose of invoking decision difficulty is in service of other theoretical models and disciplinary agendas. This might

be as part of a general theory of decision-making, as in the case of Janis & Mann's (1977) model. At other times, indecision and indecisiveness are used within a primarily vocational or clinical discourse.

Rassin's (2007) model is a rare and welcome exception. Although described as a psychological theory of indecisiveness, it encompasses both indecision and indecisiveness as understood here. While it is acknowledged to be incomplete, as all theories must be, it sets out an integrative theory of decision difficulty which accounts for dispositions, perceptions, moderating factors and outcome behaviours. A summary of the model is shown in Figure 2.1.

The model directly incorporates three core processes of indecision which were previously identified by Germeijs & De Boeck (2003): lack of information, valuation problems and outcome uncertainty. A *lack of information* is an actual or perceived insufficiency of knowledge about available alternatives, their attributes and outcomes. This is particularly relevant for indecision which occurs at the beginning of the decision-making process, since there is no opportunity for the decision-maker to engage in deliberation. Rassin (2007) also identifies individual difference components to the perceived lack of information, attributing it to a dispositional preference for maximising (i.e., having enough information for a perfect choice) over satisficing (i.e., making a good-enough decision).

Valuation problems relate to the difficulty in assigning utility to alternatives, which is largely a function of the decisional alternatives. Indecision from valuation problems may be caused by conflicts between alternatives or attributes within alternatives (e.g., choosing between a cheaper but less fuel efficient car and one which is more expensive but more fuel efficient), or from a Buridan's Ass-like situation where the alternatives appear to be equal in value.

Finally, *outcome uncertainty* is the difficulty evaluating the probability of decisional outcomes. Indecision on account of these forecasting difficulties might arise on account of the inevitable gap between choice and implementation, as discussed in Chapter 1. More commonly, heuristics and biases induced by the choice problem (e.g., framing effects) can distort the evaluation of outcomes in ways which may lead to indecision. Unsurprisingly, Rassin (2007) notes that outcome uncertainty is also predicted by a dispositional intolerance of uncertainty. Indecision can arise from any of the three processes. The latter two processes (valuation problems and outcome uncertainty) could be regarded as the two product terms in the expected utility equation, which are both contingent on the sufficiency of information. These core processes

therefore allude to the instrumentally rational depiction of the decision-maker and her or his motivations.

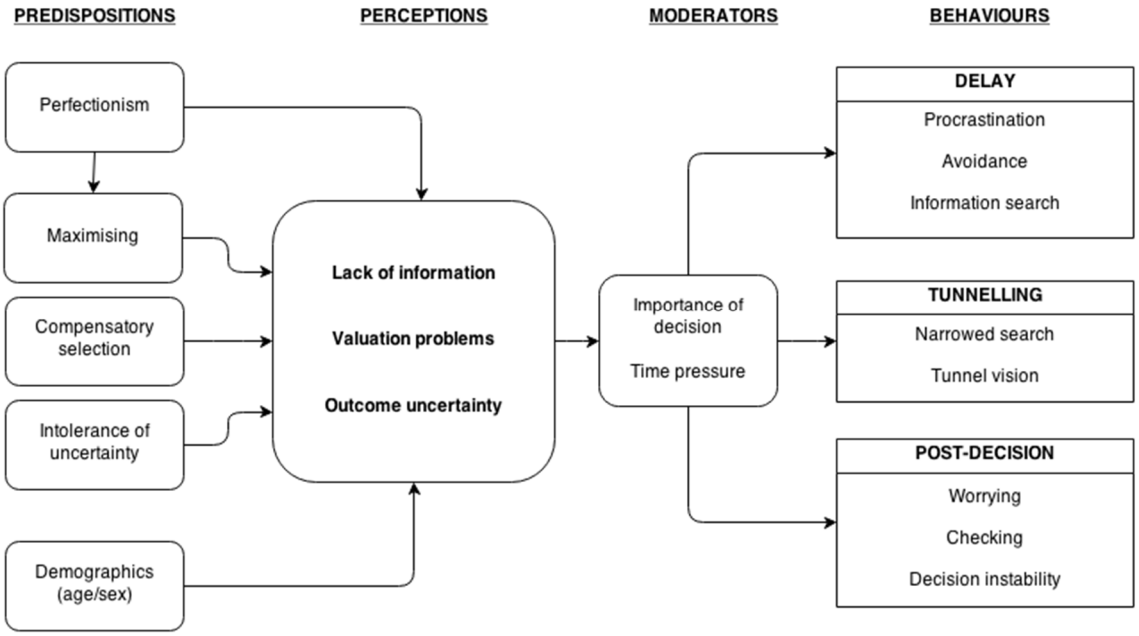


Figure 2.1. Rassin's (2007) model of indecision.

These three processes were derived from attempts to dissect decision-making into task-based computational components (Pitz & Harren, 1980; Gati & Asher, 2001; Germeijs & De Boeck, 2002), based directly on expected utility theories. Rassin (2007) goes further than Germeijs & De Boeck (2003) to address these three processes both in terms of general decision-making and information processing attitudes and dispositional preferences, as well as features of the decision-making problem. The processes are not in themselves constitutive of indecision, but are the most proximal identifiable features of such from which certain behaviours such as delay or biased information search can arise.

Nonetheless, the core processes contain a restatement of the consequentialist perspective about risky decision-making under uncertainty, that indecision is primarily a function of the information given and an inability to choose from the given alternatives. This is particularly evident in the second of Rassin's (2007) core processes, *valuation problems,* referring to the preference uncertainty induced by the content of the alternatives which gives rise to indecision. Evidence cited for the role of valuation problems in indecision comes from the literature showing that decision difficulty can be manipulated by changing the number of options (too much choice), the attractiveness of

options, how alternatives are presented, priming a certain type of search strategy or increasing time pressure (Anderson, 2003). That is, indecision can be induced without recourse to individual differences or subjective experiences.

On the other hand, Rassin's (2007) model acknowledges that these three processes are influenced by dispositional and situational factors, but this is not inconsistent with the rational choice model. The key influences are usually in the form of traits relating to information processing to the extent that they shape the evaluation of information through biases away from rational choice and the "optimal" outcome. Again, these traits are not those directly measured as part of standard indecisiveness scales but are broader traits relating to information processing and decision-making approaches (Berzonsky & Ferrari, 1996). Bar-Tal (1994), for instance, found that the "personal attributes" (traits) of a low ability to achieve cognitive structure and high need for cognitive structure were predictors of experienced conflict and decision latency, the behavioural hallmarks of indecision.

Rassin (2007) also identifies two decision and information-related traits, *maximisation* and *intolerance of uncertainty*, as relevant to perceptions of a lack of information and outcome uncertainty, respectively. There is intuitive appeal for picking out these two traits, which relate to different components of the decision-making process and have solid empirical support in their contribution to suboptimal or counterproductive decisions. However, the evidence directly linking these traits directly with indecision seems to be stronger in self-report and correlational studies (Berenbaum, Bredemeier, & Thompson, 2008; Rassin & Muris, 2005a, 2005b) than in experimental and behavioural tasks (Patalano & Wengrovitz, 2007).

Such a cautionary reminder that the nomothetic (i.e., traits) is insufficient to account directly for the idiographic i.e., (situational indecision) may, by now, be unnecessary. There is a sense of balance here: just as situational and informational factors are insufficient alone to account for indecision, neither is indecision wholly explainable by higher-order, global information processing tendencies and preferences.

Rassin (2007) acknowledges that indecision is the "experience of decision problems" (p. 2) and trait-level predictors are mediated through the core processes. However, the model nevertheless allows for a limited range of psychological experience. In the model, all the underlying antecedents to indecision can be freely traced back to rational and outcome-oriented roots. Like the other studies considered so far, Rassin's (2007) model assumes that maximising the utility of substantive outcomes is the dominant motivation of the decision-maker and is therefore also the source of

indecision. Understanding indecision, however, requires a broader view of the experience of deciding and the multiple functionalist motivations of the decision-maker.

Measurement of Decision Difficulty

Rassin's (2007) model, which represents the most comprehensive model of decision difficulty available, shows how the development of theory is dependent on having reliable and valid measures of indecisiveness and indecision. The review of decision difficulty must therefore turn to issues of measurement at both trait and state levels.

Indecisiveness

A number of self-report scales have been developed to measure indecisiveness. Only several, as summarised in Table 2.2, are still used with any regularity. As already outlined above, the task of developing instruments to measure indecisiveness is made difficult because of the lack of agreement about what indecisiveness actually is. Each measure of indecisiveness, therefore, has a slightly different construct or set of constructs in mind.

The increasingly expansive definitions of indecisiveness have also forced researchers at times to confront the possibility that measures must be multidimensional, rather than unidimensional. However, the attitude has been one of deferral and avoidance. All the scales listed in Table 2.2, for example, are designed to be used as a unidimensional measure of indecisiveness. In the measurement of indecisiveness, therefore, there is an unresolved tension between the desire to be inclusive in addressing the full range of indicators associated with indecisiveness and the need to be conceptually precise and specific.

Decisional Procrastination Scale (DPS). The problem of conceptual overreach was sidestepped in one of the earliest measures, Mann's (1982) five-item DPS. As mentioned earlier, the DPS is a subscale of Mann's (1982) DMQ, which also addresses vigilance, hypervigilance and other behavioural aspects of decision avoidance (buck passing and rationalisation) identified in Janis & Mann's (1977) conflict theory. However, the DPS tends to be used on its own as a unidimensional measure of general indecisiveness (e.g., Ferrari & Dovidio, 2000; Milgram & Tenne, 2000; Di Fabio, 2006; Ferrari & Pychyl, 2007).

Table 2.2

Details of Selected Self-Report Measures of Indecisiveness

Author(s)	Scale Name	Items	Sample Items
Mann (1982)	Decisional Procrastination Scale (DPS)	5	• "I will put off making decisions." • "I waste a long time on trivial matters before getting to a final decision."
Frost & Shows (1993)	Indecisiveness Scale (IS)	15	• "I find it easy to make decisions." • "I always know exactly what I want."
Rassin et al. (2007)	Indecisiveness Scale, Revised (IS-R)	11	Revision of Frost & Shows' (1993) IS, omitting four situation-specific items, e.g., "When ordering from a menu, I usually find it difficult to decide what to get."
Germeijs & De Boeck (2002)	Indecisiveness scale	22	• "It is hard for me to come to a decision." • "While making a decision, I feel uncertain."
Elaydi (2006)	Indecisiveness scale	13	• "I am feeling frustrated, numb, and confused because of this decision." • "I am having an emotionally difficult time with making a decision and feel trapped in the decision-making process."

While the DPS has good internal psychometric properties (Ferrari & Dovidio, 2000), the items in the DPS, consistent with its name, relate only to decision avoidance or procrastination. This is only a small subset of the range of experiences and behaviours associated with decisional difficulty reviewed earlier. The DPS, for instance, does not contain any items relating to aversion or negative affect in the activity

of decision-making. As decisional procrastination represents only one component of indecisiveness, the DPS is therefore best used as a targeted measure of behavioural tendencies. Results from studies relying on the DPS (e.g., Milgram & Tenne, 2000) must therefore be interpreted with caution if they make claims about indecisiveness or indecision more generally.

Indecisiveness Scale (IS). The narrow focus of the DPS can be contrasted with Frost & Shows' (1993) IS, which has been the most frequently used measure of indecisiveness. This 15-item instrument was designed to measure the extent to which indecisiveness was associated with obsessional-compulsive tendencies (Frost & Gross, 1992; Gayton, Clavin, Clavin, & Broida, 1994).

The items, on their face, address a considerable number of the features of decision difficulty discussed at the beginning of this chapter. Several items in the IS relate to decisional avoidance and procrastination (e.g., "I try to put off making decisions"), similar to the DPS. The IS goes a little further by addressing the aversive experience of decision-making (e.g., "I become anxious when making a decision"), although there is relatively little overall emphasis on emotion, let alone different kinds of affective states experienced by the decision-maker. There is instead more emphasis on post-decisional regret and rumination (e.g., "After I have chosen or decided something, I often believe I've made the wrong choice or decision"). A cluster of reversed-scored items look at decisional confidence and the hedonic aspects of decision-making (e.g., "I like to be in a position to make decisions"), which are facets of decision-making seldom included in the discourse on decisional difficulty.

The 15 items are summed to form a unidimensional measure of overall indecisiveness. The IS showed good reliability with an observed Cronbach's alpha of .90 in Frost & Shows' (1993) original validation study, although this was conducted with only 112 females and no males. In terms of the original research objectives, a significant association was found between the IS and cognition-related subscales on OCD-related inventories. This included the checking ($r = .41$, $p < .001$) and doubting ($r = .31$, $p < .001$) subscales on the Maudsley Obsessive-Compulsive Inventory (MOCI, Hodgson & Rachman, 1977). Curiously, there was a near-zero relationship between the IS and the slowness scale on the MOCI ($r = .02$, $p > .05$). This subscale is intended to assess whether the participant takes longer than necessary to perform common tasks, and as such would be expected to correlate with indecisiveness, since delay, avoidance and procrastination are common behavioural expressions (cf. Sánchez-Meca et al., 2011).

Indecisiveness, as measured on the IS, has been found to be correlated with other maladaptive characteristics beyond obsessive-compulsive features. These include low self-esteem (Germeijs & De Boeck, 2002; Santos, 2001; Patalano & LeClair, 2011), perfectionism (Frost & Shows, 1993; Gayton et al., 1994), trait anxiety (Fuqua & Hartman, 1983; Santos, 2001) and low conscientiousness (Patalano & LeClair, 2011). While Rassin & Muris (2005b) found that female undergraduate students scored higher on the IS than males, significant sex differences have not always been found (Patalano et al., 2009; Yates et al., 2010; cf. Spunt et al., 2009). Cultural differences have also been observed on the IS, as discussed in the previous chapter.

The IS is therefore a solid starting point for research on indecision and indecisiveness on account of its comprehensiveness and uptake, but further work is required in relation to its theoretical scope and validity.

Indecisiveness Scale, Revised (IS-R). Despite its relatively good psychometric properties and utility to clinical and personality research, the IS has some other limitations in its construction beyond its atheoretically wide scope. The IS contains four items relating to specific situational experiences of indecision. These is one question about choosing from a restaurant menu ("When ordering from a menu, I usually find it difficult to decide what to get"), one about planning free time and two questions on completing university assignments in a timely manner. These questions preclude the IS from being a truly domain-free, general measure of trait indecisiveness (Yates et al., 2010). The items about assignment completion, for instance, would be irrelevant for a non-student sample. The questions might also be conflated with other predictors of procrastination as a student, including academic attitude or aptitude.

Mindful of these issues, the construction of the IS was revisited by Rassin, Muris, Franken, Smit, & Wong (2007), who merely omitted these four items in their revised scale, the IS-R. The remaining 11 items were retained unchanged. The shortened scale also showed acceptable psychometric properties, similar to the original IS. A Cronbach's alpha of .86 and a 4-week test-retest reliability of .88 were observed in the validation sample. While a conceptual improvement on the IS, the IS-R is also designed to be a one-factor measure of overall indecisiveness, which remains problematic for the same reasons as the IS.

Germeijs & De Boeck's (2002) Indecisiveness Scale. The recurring difficulties in establishing construct validity in measures of indecisiveness have been met with various attempts to keep instruments "unpolluted" by extraneous concepts. Before Rassin et al.'s (2007) revision of the IS, Germeijs & De Boeck (2002) had

similarly argued that most measures of indecisiveness, including the IS, were already too confounded. Like Rassin et al. (2007), Germeis & De Boeck (2002) also pointed out that the inclusion of specific situational triggers of indecision in the IS was unwise and that these kinds of questions should be omitted.

More radically, they suggested measures like the IS often muddled aspects of the decision-making process (such as latency, postponement and regret) with the causal antecedents or other dispositional correlates of indecision (such as low self-esteem or helplessness). For instance, they argued that questions such as "I try to put off making decisions" in the IS should be retained in indecisiveness instruments because of its direct connection to the process of decision-making. However, the question "For me, decision making seems frustrating", taken from the Careers Factors Inventory (Chartrand et al., 1990), should not be included because it related to a broader (but unidentified) aspects of personality which could be explained by traits or situational factors other than indecisiveness.

Germeijs & De Boeck's (2002) argument raises some good questions about how to recognise the multifaceted nature of indecisiveness. One reading of Germeijs & De Boeck's (2002) prescription for what should be included and excluded from indecisiveness scales is that there should be a distinction between (objective) *behaviours* relating to decisional difficulty, such as delay, and (subjective) *appraisals* about decision-making and the experience of decisional difficulty. This possibility could only be inferred by the authors' selection of examples.

Despite their noble intentions, Germeijs & De Boeck's (2002) approach to creating an "unconfounded measurement scale for indecisiveness" (p. 114) was somewhat dissatisfying. The result of supposedly refining items from available scales of indecisiveness resulted in a new scale of 22 items, more than the 15 items in the original and already wide-ranging IS. A one-factor interpretation of the scale was shown to be preferable, based on a principal components analysis, although the sample and methods used were insufficient to disconfirm the presence of other components.

In light of their own criticisms about the lack of purity in other indecisiveness scales, Germeijs & De Boeck's (2002) scale was also unusual in that it nonetheless continued to address a wide range of characteristics of decision difficulty. To their credit, their indecisiveness scale does include more questions about the decision-making process compared with the IS, but the scale still samples from a wide range of indicators of not only indecisiveness but also indecision. There is arguably little difference between this scale and other supposedly "impure" scales like the IS. For instance, the

question “While making a decision, I feel uncertain” seems very similar to questions which the authors argued should be excluded because of conceptual imprecision (in this case, perhaps confounding indecision with a global intolerance of uncertainty: Dugas et al., 2005). Germeijs & De Boeck’s (2002) instrument also includes questions about indecisiveness as a self-construct (“I would characterise myself as an indecisive person”) which, although critically important, does not seem to be directly connected to the decision-making process as they had intended.

The inclusion of such questions despite the stated purpose of finding a more restrictive and focused scale may justify the opposite conclusion to that proposed by Germeis & De Boeck (2002). It may be that these supposed confounds are in fact essential to the construct of indecisiveness, but for different functional reasons. Such a conclusion would affirm that indecisiveness is conceptually wide and multifaceted, and that the excision of concepts may be an unproductive way to create a good measure.

Almost a decade later, Germeijs & Verschueren (2011) continued the quest to improve the construct and predictive validity of indecisiveness measures. This time, they argued that the measurement of indecisiveness should not be conflated with items about trait anxiety. Defining trait indecisiveness narrowly by its behavioural features, they present evidence for its specificity and conclude that items relating to trait anxiety — or any form of anxiety — should be excluded from the measurement of indecisiveness.

As a preliminary issue, the study shows how the definitional ambiguity about the nature of indecisiveness and indecision still casts a long shadow. Germeijs & Verschueren (2011) firmly recognise indecisiveness as a trait, but accept that it should be defined in terms of specific behavioural outcomes such as delay, avoidance, instability, regret, worry and delegation. This seems to be at odds with their distinction between indecisiveness and the consequences of indecisiveness (or more correctly, indecision) in the form of postdecisional problems which include decisional instability, regret and worry.

Setting this aside, their study involved placing Germeijs & De Boeck’s (2002) indecisiveness scale (which already tried to eliminate extraneous concepts such as anxiety) and the trait anxiety items in the Dutch translation of the State-Trait Anxiety Inventory (STAI) into exploratory and confirmatory factor analyses. The results yielded a clear separation between the indecisiveness and anxiety items. This factor structure was taken as evidence of the distinction between the two constructs, in support of their hypothesis that an indecisiveness scale need not contain items relating to anxiety. A

plausible alternative interpretation, however, might be that an indecisiveness scale which has been engineered to be free of anxiety items may well stand on its own — but only as one component of indecisiveness.

Anxiety may then be associated with other components of indecisiveness, especially those which relate to appraisals about mistakes, decisional capability, responsibility and social evaluation. Trait-level predictors of the aversive experience of indecision must also be considered as part of indecisiveness. Strikingly, despite Germeijs & Verschueren's (2011) theoretical stance and their factor analytic results, there was still a sizeable correlation between trait anxiety and indecisiveness on their new measure ($r = .54$, $p < .01$). It seems that anxiety cannot be eradicated from indecisiveness. The question then remains as to how to make sense of it at both trait and state levels. Chapter 3 will consider one possible model based on different functional motivations on the part of the decision-maker.

Spunt, Rassin, & Epstein (2009): Avoidant and aversive indecisiveness. As noted above, there have been some limited attempts to test whether indecisiveness scales are unidimensional or multidimensional. However, these analyses of the factor structure of indecisiveness measures have usually been conducted as a secondary part of the research, relying on small sample sizes (Germeijs & De Boeck, 2002: $n = 144$; Rassin et al., 2007: $n = 291$, reporting only loadings on the first factor based on an unrotated principal components analysis).

The only substantial attempt to explore different components of indecisiveness comes from Spunt, Rassin, & Epstein (2009), who conducted factor-analytic and correlational analyses using the IS-R. Spunt et al.'s (2009) approach was based on Gray & McNaughton's (2000) revised reinforcement sensitivity theory (rRST). This theory of personality and behaviour sets out three motivational systems: the Flight/Fight/Freeze System (FFFS), Behavioural Inhibition System (BIS) and Behavioural Approach System (BAS). rRST builds on the basic motivational premise in psychology that behaviour can be categorised in terms of that which approaches positive outcomes or that which avoids negative outcomes (Corr, 2004).

Applying this to decision difficulty, Spunt et al. (2009) hypothesised that there should be two distinct kinds of indecisiveness: *aversive indecisiveness* and *avoidant indecisiveness*. In their view, aversive indecisiveness, rooted in the BIS, would be characterised by negative affect, threat-oriented cognition and maximising decision behaviour. Avoidant indecisiveness, hypothesised to be associated with lower BAS sensitivity, would be characterised by a motivated avoidance of decisions as well as

difficulties during the course of making a (non-avoidable) decision. It should be noted that this distinction requires a suspension of some of the previously raised theoretical questions about whether these categories more properly relate to trait or state aspects of decision difficulty.

Spunt et al. (2009) tested these hypotheses by exploring the factor structure of the IS-R by way of an EFA followed by a CFA, correlating the resultant factor structures against the self-report BIS/BAS Scales (Carver & White, 1994) and other personality indices. No behavioural decision-making tasks or other experimental manipulations were included in their two correlational studies. Despite the sample size of the EFA study, $n = 133$, being on the smaller side for this kind of analysis, Spunt et al. (2009) found support for a two-factor structure with items interpreted as corresponding to aversive and avoidant indecisiveness. The three items on the IS-R with the highest loadings on each factor are shown in Table 2.3. This structure was supported by the CFA in Study 2 ($n = 263$). Generally supporting their predictions, avoidant indecisiveness was negatively associated with the approach-oriented BAS, while aversive indecisiveness was associated with both BIS (positively) and BAS (negatively). Aversive, but not avoidant, indecisiveness was correlated with regret proneness and maximisation, as predicted.

Table 2.3

Highest Three IS-R Item-Factor Loadings on the Aversive and Avoidant Indecisiveness Factors, from Spunt et al. (2009)

Item	**Item-factor Loading**
Aversive Indecisiveness	
I often worry about making the wrong choice.	.775
After I have chosen or decided something, I often believe I've made the wrong choice or decision.	.713
I become anxious when making a decision.	.685
Avoidant Indecisiveness	
I always know exactly what I want.*	.753
I try to put off making decisions.	.662
I usually make decisions quickly.	.647

Note. * Item is reverse scored.

The two-factor structure broadly supported the claims of rRST, but the factor scores did not map neatly against BIS/BAS measures. This is not unexpected, given that rRST is a much broader theory of motivation and behaviour. More critically, the distinction between avoidant and aversive subtypes of indecisiveness is not as clear as the labels may seem to imply. Spunt et al. (2009), for example, proposed that athe experience of having difficulty when making decisions is a feature of avoidant indecisiveness, even though it seems conceptually to be a better fit with aversive indecisiveness. Part of the problem may be with the IS(-R) itself, which contains few items about the aversive experience of indecision in the first place.

The IS(-R) does, however, have more items relating to regret, which tended to load on the aversive indecisiveness factor in Spunt et al.'s (2009) analysis. Although the authors rightly point out that anticipated and actual regret plays an important role in indecisiveness, regret should not be regarded as equivalent to the aversive experience during the activity of decision-making itself. This is particularly so for post-decisional regret, which occurs after a decision is ostensibly concluded. While this is ultimately a matter of scale construction and a limitation of the IS-R, perhaps a more appropriate interpretation of the aversive indecisiveness factor might be *experienced indecisiveness* (encompassing both immediate aversive experience and post-decisional regret).

Nonetheless, Spunt et al.'s (2009) study shows that a multifactorial approach to indecisiveness is plausible and within reach, and could be revisited by improving the conceptual basis of the items. This will be a focus of Chapter 4. Indecisiveness scales, especially used alone, however, can at best only look at one part of decision difficulty. While there is the temptation to make inferences from indecisiveness to indecision based on self-report, this neglects the many concurrent psychological processes and motivations involved in the state of indecision especially from a functionalist approach to decision-making. It is therefore also important to consider the measurement of indecision.

Indecision: Decisional Outcomes and Process

Standard behavioural and self-report measures. The primary ways of measuring indecision have been through observable indices of decision-making behaviour (such as decision time), and through self-reports of decision difficulty. A common assumption in the empirical research that indecision is necessarily expressed as decision latency; that indecision means taking longer before a decision is made. Frost

& Shows (1993), for instance, presented 88 female US college students with a series of two-alternative forced choice decisions. The decisions were on everyday matters, such as choosing between items of clothing, college courses, recreational activities, or items from a restaurant menu. Participants were drawn from a previous study using the newly-developed IS and were selected and categorised if they scored above the 75th percentile (high indecisiveness) or below the 25th percentile (low indecisiveness). High-indecisiveness participants took significantly longer to make a decision than low-indecisiveness participants (M = 837 s vs. M = 523 s, standard deviations not reported, but with t and Mann-Whitney U-tests being significant, ps < .05).

Decision latency, however, is relative. Unless comparisons are made against appropriate norms — a formidable if not impossible task in itself — a measure of decision time alone is inadequate to establish the presence of indecision. As Descartes pointed out, delay and irresolution may be benign or even adaptive if used for productive deliberation. Frost & Shows (1993) therefore supplemented the measure of decision time with a measure of self-reported difficulty. High-indecisiveness participants reported experiencing significantly more difficulty on the decision tasks than low-indecisiveness participants. Self-reported difficulty, latency and indecisiveness were therefore all correlated, but do not necessarily measure the same thing. A multi-method approach to measuring indecision is not only good practice but essential when looking at different decision-maker motivations and situational demands.

Another standard behavioural index of indecision is the amount of information perused before a decision is made. Rassin et al. (2007) measured indecision using two decision-from-experience tasks, which involved sampling pieces of red and blue coloured straw from a bag. Participants were told that of the 100 straws, 85 were of one colour and 15 were of the other. Participants sampled straws until they felt like they could make this judgment. Indecisiveness as measured on the new IS-R was positively correlated with the number of straws drawn (r = .45, p < .01). That is, indecisiveness predicted the amount of information that participants gathered before feeling confident enough to decide. This effect remained after controlling for age and intolerance of uncertainty, although the small sample size of 62 participants limits the weight of these results.

Process tracing. The relationship between indecisiveness and indecision as increased decision time and information search may not be as simple as it appears. Other studies have shown that decisive and indecisive participants behave differently in the process of decision-making. Indecision can therefore also be measured using

process tracing methods in terms of decision strategy and responsiveness to situational cues and demands, although the inferences which can be made about the motivations and struggles of decision-makers are still limited in these measures.

Ferrari & Dovidio (2000) examined whether participants high and low in decisional procrastination (calculated using a median split on the DPS) differed in how they reached a decision. Participants were shown an information matrix of five possible college courses, each containing six different attributes (e.g., instructor quality and peer recommendation). Participants were asked to choose a course after exploring the information by turning over the attribute cards. The dependent variables were the decision time, the number of cards turned over and the sequence in which the cards were explored. As hypothesised, and consistent with Frost & Shows' (1993) results, participants who scored high on decisional procrastination took longer to choose a course. Ferrari & Dovidio (2000) also found evidence that indecisiveness (as decisional procrastination) was associated with a confirmatory search strategy. That is, participants higher in dispositional decisional procrastination searched more about the choice they ultimately made, indicative of either a preference for narrow search strategies or a need for certainty.

Ferrari & Dovidio (2000) concluded that indecision may activate negative self-evaluations and fear of mistakes, personal failure and criticism. However, this possibility was not explored further, perhaps due to the absence of data relevant to these broader dimensions of the decision-maker. The design of the study was a constraining factor, with the hypothetical decision not being consequential for the participant, and instead being high on information and attribute-based comparisons. There were also no measures of indecision as perceived difficulty or experienced aversion. Nonetheless, the interesting implication is that indecision cannot be explained or even measured merely as a function of information search, processing and other overt outcomes. Some of these ideas are revisited in Chapter 4.

Patalano & Wengrovitz (2007) also used a similar process-tracing method to Ferrari & Dovidio (2000), involving the selection of a college course, but turned it into a properly dynamic decision-making task. Using a computer-based rather than paper information matrix allowed the experimenters to manipulate time-based decisional risk. In the risky condition, a desirable choice became unavailable after a certain amount of deliberation time while in the no-risk condition all options remained available for the duration of the task. In the study, participants were categorised as "decisive" or

"indecisive" based on the results of a median split on Frost & Shows' (1993) IS, unfortunately compressing the dimensional data into an arbitrary dichotomy.

Compared with decisive participants, indecisive participants did not differ in how long they delayed the decision when risk was either present or absent. This insensitivity to risk information led to poorer decisional outcomes because the desirable option became unavailable due to delay. Decisive participants, on the other hand, were able to modulate their decisional strategy to make a choice more quickly when risk was present. That is, this responsiveness to risk enabled decisive participants to reach an outcome and conclude the decision-making process more efficiently, at least from an instrumentally rational view.

This finding qualifies previous assumptions about a fixed association between indecisiveness and delay (e.g., Ferrari & Dovidio, 2000), especially since there was no main effect of indecisiveness on delay. Despite the simplistic categorisation, indecisive and decisive participants did not differ on the whole in the amount of time they took to choose a course. The assumption that indecisive people, or that indecision as a state, necessarily leads to deferred choice must therefore be qualified.

Looking instead at the decision-making process, Patalano & Wengrovitz (2007) found that decisive participants tended to adopt a dimension-based search strategy, which involved comparing different courses based on the same attribute before going onto another attribute. This is a non-compensatory strategy which, although maximising and resource intensive, always leads to a preferred outcome. Such a strategy prevents a Buridan's Ass situation where all options appear equal, and thus facilitates a decisional resolution through a clear ordering of preferences. Moreover, decisive participants were able to modulate their use of this strategy in the presence of risk, compared with the absence of risk, such that good outcomes could still be reached.

Indecisive participants, on the other hand, preferred an alternative-based pattern. This is a compensatory strategy which involves looking at all attributes for each course option before then proceeding to the next course. According to Patalano & Wengrovitz (2007), this is in fact a satisficing strategy (Simon, 1955). This seems counterintuitive, since it appears that a satisficing strategy is maladaptive while a maximising strategy is more efficient (cf. Sparks, Erhlinger, & Eibach, 2012). Nonetheless, the authors persuasively argue that it still meets the definition of satisficing strategy given that the search process is still intended to terminate when the threshold for an acceptable alternative is reached. It just happens to be a defective method of satisficing, since the threshold is set far too high for a good outcome to be chosen. Indeed, unlike non-

compensatory strategies, a preferred outcome might not even be reached at all, which may be one basis for indecision as the lack of choice. Crucially, the high threshold is maintained even when risk is present, leading indecisive participants to search for significantly better possibilities even when utility is declining.

The insensitivity of indecisive individuals to risk information and their overall tendency to engage in defective satisficing led Patalano & Wengrovitz (2007) to conclude that decisive individuals can anticipate and act on this trade-off in an adaptive way. By contrast, indecisive individuals seem to be unwilling or unable to make this trade off. These findings therefore account for decisional latency by way of a negative process, an inhibition of response, rather than an additive process such as motivated supplementary information search. Indecisive participants showed an inability to scale down an adaptive strategy in a context where its continued use would be maladaptive from an outcome-oriented perspective.

However, Patalano & Wengrovitz (2007) are quick to point out that insensitivity to risk is not the same as an unawareness of risk. They suggest that indecisive participants notice the risk but process it in different ways, such as by choosing to deliberate further without adjusting the threshold for acceptability downwards. Alternatively, a lack of responsiveness to risk may be more akin to a "freeze" response in which an elevated level of threat disrupts processing to the point where this information is not acted upon (Bredemeier & Barenbaum, 2008; Schmidt, Richey, Zvloensky, & Maner, 2008). This understanding of indecision brings the focus onto the immediate and dynamic characteristics of the particular decision-making situation, such as time pressure and conflicting motivations to search or stop over the time course of the decision.

To explain these unintuitive results, Patalano & Wengrovitz (2007) introduce a distinction between the expected utility of *delaying a decision* and the expected utility of the *choice outcome*. In dynamic decisions involving time-based risk, there is accordingly a conflict between these different forms of utility. This takes the form of an exploration-exploitation trade-off (March, 1991), which is in essence a meta-choice between two conflicting approaches. There are foreseeable costs of committing to a choice before sufficiently exploring the available choices and possibly discovering a better option. This is balanced against the risks of delaying choice such that the attractive alternatives are no longer available. In the conflict between delay and choice, a new and immediate decisional problem is created: delay choice (and keep exploring), or choose now. Indecision may therefore be in the difficulty of resolving this particular

decision as to whether to continue or terminate the "head" decision, in addition to the difficulty of evaluating the available choices. Patalano & Wengrovitz (2007) note that these two positions represent different sets of goals and motivations. Although these are still grounded in the goodness of decisional outcomes, this acknowledgement recognises that there are multiple and contrasting functional considerations of the decision-maker which may result in indecision.

Returning to the line of research looking at trait indecisiveness on search strategies, Rassin, Muris, Booste, & Kolsloot (2008) sought to revisit the relationship between indecisiveness and informational tunnel vision. "Tunnel vision" seems to be a more visual term to describe confirmation bias or a positive test strategy, especially as it relates to the preferential treatment of evidence supporting existing beliefs (Nickerson, 1998; Klayman & Ha, 1987). Such a relationship was proposed in Rassin's (2007) theory of indecisiveness, drawing from the results of Ferrari & Dovidio's (2000, 2001) studies in which indecisive participants tended to seek more information about the eventually chosen option.

Using a similar information search task to Ferrari & Dovidio (2000), they hypothesised that participants high in indecisiveness would use a confirmatory search strategy to limit the amount of information gathered. This would appear to be at odds with the finding that indecisive people tend to have a greater need for information before a decision. However, Rassin et al. (2008) suggest that there is a countervailing self-regulatory process to prevent search and evaluation from going too far. While indecisive people may have a high need for information or certainty, they are also motivated not to be overwhelmed by such information. Confirmatory search may be self-protective, at least in the short term, to limit the amount of search and information gathering. Once again, indecision necessarily involves the motivations of the person making the decision, rather than just the informational structure and content.

Returning to the level of measurable outputs, indecisiveness-driven tunnel vision would be observed in terms of a narrowed search strategy, focusing on a smaller number of already-preferred options. Such a view of the role of indecisiveness on decisional behaviour, however, is dissimilar to the mechanisms proposed by Patalano & Wengrovitz (2007). In that study, there was no evidence of confirmation bias. Rather, the insensitivity to risk shown by indecisive participants resulted in a high threshold for stopping, not a motivated limiting of search. Despite these differences, Rassin et al. (2008) found that indecisiveness (as measured on the IS-R) was associated with tunnel vision, independent of perceived choice difficulty. However, virtually the same small-

to-moderate correlation with the IS-R was observed for the amount of information seeking ($r = .30$, $p < .05$) as well as confirmatory search (searching on cards relating to ultimately chosen course; $r = .29$, $p < .05$). Although the study was limited in power, with a sample size of only 50 participants (76% female), the results suggest that there are parallel or hierarchical, and potentially opposing, self-regulatory processes in indecision which are based on different motivations.

Rassin et al.'s (2008) second study ($n = 54$) operationalised indecision by manipulating choice difficulty in a similar course-selection task. In the low difficulty condition, the available courses were very different to each other. In the high difficulty condition, the choice set was very similar. Again, there was a main effect of indecisiveness on informational search independent of choice difficulty, with indecisive participants seeking out more information about their chosen option relative to information about the non-chosen option (cf. Patalano & Wengrovitz, 2007). Indecisive participants also made lower-quality choices, as assessed using a somewhat arbitrary assignment of outcome value based on the course attributes. The conclusion drawn was that informational tunnel vision can be explained by indecisive participants' satisficing tendencies (cf. Ferrari & Dovidio, 2000). The search process used by indecisive participants was selective rather than unstructured and stopped when a high confirmatory threshold was reached, even though indecisive participants still tended to search for significantly more information than decisive participants. Despite some otherwise inconsistent results, the findings on this point were not dissimilar to Patalano & Wengrovitz's (2007) results that indecisive participants engage in a dysfunctional kind of satisficing. These results further add to the need to understand better the self-regulatory aspect of indecision.

Patalano, Juhasz, & Dicke (2009) attempted to resolve some of these discrepancies about search strategy and indecision. Their study supplemented the computerised information board paradigm used in previous studies with eye tracking measures. Eye movements and fixations were used as a more direct way of measuring patterns of dynamic information search rather than just the order in which the information was accessed. Patalano et al. (2009) found that there were time-course differences between decisive and indecisive participants in their search strategy. Indecisive participants tended to shift away from compensatory, alternative-based search strategy to non-compensatory, attribute-based search strategy over the task. Decisive participants, on the other hand, stayed with an attribute-based search strategy over the entire task.

In order to look at the effect of time on search strategy, Patalano et al. (2009) divided the task into two halves, split at the midpoint of the total number of eye fixations. That is, the comparison between the first and second half is based on the amount of information seeking, which is correlated with, but not equivalent to, the absolute amount time spent on the task. Why a time-series analysis was not used instead of an arbitrary split is unclear.

While Patalano et al. (2009) found evidence of confirmation bias in indecisive participants, they also found that indecisive participants spent more time looking *away* from the information cells compared with decisive participants. This is consistent with other observations in the literature associating indecisiveness with distractibility, self-regulatory depletion (Ferrari & Pychyl, 2007), or decisional avoidance (Anderson, 2003; Janis & Mann, 1977). Alternatively, it may show that indecisive decision-makers continue to process previously-viewed information in memory rather than direct exposure, and thus mentally keep the decision event open without behavioural expression.

Like Rassin et al. (2008), Patalano et al. (2009) infer from these findings that indecisive participants are not only inclined towards costly and information-heavy compensatory search strategies, but use them badly. However, "they eventually have to take action to reduce the otherwise intractable decision problem, namely by refocusing on a narrow set of dimensions" (p. 365). While at one level this finding reconciles the apparent incompatibilities between Ferrari & Dovidio's (2001) findings and their previous study (Patalano & Wengrovitz, 2007), a novel interpretation may be that indecisive participants are switching between different functional motivations, and may also be inefficiently expending psychological resources in this process of self-monitoring.

Nonetheless, why indecisive participants changed their search strategies and what triggered the shift is left unexplained. That it occurred "eventually", in the midst of the act of deciding, is telling. This is an area where the functionalist and experiential dimension of indecision may be able to cast some light. Patalano et al. (2009) make a similar claim to Rassin et al. (2008) that a self-regulatory process is involved to correct for an underlying propensity for indecisive people to engage in unmanageable and maladaptive search and decision-making processes. This in turn implies the presence of opposing processes, one motivating towards high levels of cognitive activity in search and evaluation, the other as an inhibitory process downregulating this activity and drawing the decision-maker towards a "fast and frugal" strategy. The delay in the

inhibitory process, even as detected at a very low temporal resolution in this study, points to the possibility that the appraisal of decisional difficulty may be involved in shaping how the decision activity proceeds. The unresolved question is then how these two processes relate to influence the phenomenon of indecision. In addition to predisposing tendencies and strategies and their effect on the decision-making process, it is also necessary to consider the in-line appraisal of the decision-making activity in terms of not only decisional outcomes but the effort, cost, discomfort and self-reulgatory demands of decision-making and the meaning attached to being a decision-maker.

Finally, and jumping back in time slightly, Rassin & Muris (2005a) also sought to explore how indecisiveness affects the process of decision-making. Their design involved looking at correlations between the IS and participants' responses on the Ambiguous/Unambiguous Situations Diary (AUSD; Davey, Hampton, Farrell, & Davidson, 1992). The AUSD was developed as a measure of threat appraisal for research on worry. It contains 28 descriptions of everyday situations, written as if they were entries in a diary. Half of the statements express an unambiguous outcome, which were either positive (e.g., "I have just come back from the travel agents and have managed to book a really cheap two week summer holiday"), or negative (e.g., "Not only was yesterday's meal out very disappointing, but I now also think I have food poisoning"). The other half of the statements were ambiguous, meaning that they could be interpreted as being threatening or benign. One example of an ambiguous statement is "I phoned the doctor today and was surprised to hear the result of last week's check-up."

For each entry in the AUSD, participants indicated whether it would make them feel "concerned" or "unconcerned". These responses are summed for each type of statement to generate an index of threat perception in reaction to unambiguous (positive and negative) and ambiguous situations. The binary and categorical, rather than dimensional, response for each item limits the granularity of this scale considerably. This is on top of the ironic ambiguity about what constitutes "concern". The scale is intended to assess appraisals of threat, but this would be difficult to separate out from other kinds of concern, including positive expressions such as empathy.

Nonetheless, in their small sample of 50 female undergraduate students, Rassin & Muris (2005a) found a moderate correlation between the IS and AUSD, but only for ambiguous situations ($r = .31$, $p < .05$). No significant correlations were found between the AUSD-Ambiguous score and other measures of uncertainty intolerance, worry,

depression or anxiety. Despite the above criticisms, the relationship between the IS and AUSD was interpreted as a tendency for people high in trait indecisiveness to "play it safe" by interpreting ambiguous situations as potential threats. Once again, there seems to be a dual role of broader activating and inhibitory processes which are mediated through the appraisal of the decision-making situation. The relationship between threat perception and decision difficulty is also consistent with the links between indecisiveness and anxiety, depression and obsessive-compulsive tendencies. This will be discussed further in Chapter 8.

However, given the methodological limitations of the study, the conclusion that indecisiveness fosters "worst case scenario reasoning" (p. 1285) may be premature. The study included no measurement of reasoning processes, such as a tendency towards catastrophising or *ex-consequentia* reasoning (Arntz, 1995) from which such an inference could be drawn. The conclusion was drawn from one small-to-moderate correlation. Moreover, there is limited evidence to support the conclusion that indecisiveness affects the *content* of choices over and above the decision-making process. Such an extrapolation from the AUSD seems unwarranted, especially since the instrument is non-consequentialist in the broadest sense of the term. No gains or losses, or any consequences, utilitarian or otherwise, were attached to the categorisation of the depersonalised diary events. In any event, the study contributed to the evidence that the relationship between indecision and confirmation bias is much more complex than it may appear. Threat-oriented decision behaviour may be mediated through other processes including congruence or incongruence with self-concept as a decision-maker (Munro & Stansbury, 2009).

Review

Although bolstered by more recent and innovative process-tracing studies, the empirical studies on indecision are still highly variable in terms of methodological quality. The use of small samples (many of which were women-only), median splits and other contrived categorisation of variables undermine the generalisability of the results. In terms of Gigerenzer's (1998) criticisms about theory surrogates, these problems in design and analysis both contribute to and reflect underlying weakness in the conceptual understanding of indecisiveness and indecision.

Nonetheless, several critical conclusions can be drawn from these studies. Firstly, indecision cannot be reduced to decisional delay or extensive information search, even though these may be useful and easily measurable markers as part of a

multi-method approach to measurement. Secondly, there is not necessarily a linear relationship between indecisiveness (or indecision) and delay or increased search. Process-tracing studies show that much depends on the goals and motivations of the decision-maker, shaped by trait indecisiveness and the demands of the decision context.

Thirdly, the conceptual and empirical leap from indecisiveness to decision-making behaviour in relation to outcomes without considering the psychological experience of indecision is increasingly difficult to sustain. The implicit behaviourism which is often found in the experimental study of indecision has reached its limits. Pleasingly, a number of studies make reference to the possible role of self-regulatory, metacognitive and affective processes, but direct investigation is yet to be done meaningfully. A new psychological model of decision difficulty is therefore needed.

CHAPTER 3:
A FUNCTIONALIST MODEL OF INDECISION AND INDECISIVENESS

The previous two chapters have created a state of tension and irresolution. The interdisciplinary and meta-theoretical first chapter sought to uncover new and broader ways of thinking about decision-making and therefore decision difficulty. Decision-making was characterised as a multi-motive activity, and decision difficulty seen through the lens of these different goals of being a decision-maker. Chapter 2, on the other hand, showed that the psychological research on indecision and indecisiveness has tended to be insular, conceptually narrow and sometimes flawed in both theory and measurement.

From these opposing foundations, this chapter sets out an integrative psychological model of indecision and decisiveness. As an *a priori* theoretical model, this chapter continues to draw from the JDM literature, the specific literature on decision difficulty, as well as cognate topics in social, cognitive and clinical psychology. The guiding philosophy is a somewhat optimistic view of the human decision-maker. Decision-makers may often be beset by struggles and decide reluctantly (Janis & Mann, 1977), but they also strive for the good. Outside clinical pathologies of decision-making (see Chapter 8), decision-makers seek to attain not only good decision outcomes but also to be good at decision-making and to be good decision-makers. Indecision represents a failure to attain these adaptive goals, but not for a lack of intention and motivation towards these things.

The Pieces So Far

Putting together some of the reflections and observations from the previous two chapters, we can arrive at a set of key principles which inform the development of a psychological theory of indecision and indecisiveness:

1. The primary object for the psychological study of indecision and indecisiveness is the decision-maker, rather than the decision in terms of its content and outcomes.

2. Specifically, indecision must be considered in the context of the decision-maker's functionalist motivations. There are multiple concurrent motivations, which are set out in Table 3.1. These include the attainment of good substantive

decision outcomes (i.e., the intuitive economist in Tetlock's (2002) framework), but also include motivations about managing the activity of deciding and how one appears as a decision-maker.

3. Each decision-making motivation can also be a source of indecision. That is, they can produce a maladaptive or dysregulated state within the decision event which is inconsistent with functional objectives.

4. Indecision must therefore be distinguished from cognate constructs like procrastination, which is a problem of self-regulatory failure or avolition in relation to an intended course of action (Steel, 2007). Indecision is unlikely to be primarily caused by a lack of motivation, but rather a conflict of motivations or even a state of *hyper*motivation, where too many concurrent and conflicting goals obstruct the decision-making activity. In this way, the conflict in decision-making is not only between competing outcomes (Janis & Mann, 1977) but competing goals of the decision-maker.

5. Both state and trait components of decision difficulty needs to be considered. However, while often correlated, indecisiveness (the trait) and indecision (the state) are not equivalent. Nor are they unidimensional.

6. Indecisiveness is more than the frequency of indecision. Indecisiveness influences attention and appraisal, which shapes the likelihood and nature of indecision.

7. Avoidant and aversive indecisiveness are two global but opposing processes, reflecting a different set of attitudes towards the activity of decision-making (Spunt et al., 2009). Avoidant indecisiveness characterises decisions as threats to be avoided, whereas aversive indecisiveness includes the anticipation and appraisal of negative affect and dysregulation during decision-making.

8. Indecision has a range of different experiences and behaviours, including both approach and avoidant behaviours. These may appear contradictory until they are seen as maladaptive responses to different functional demands and challenges of the decision-maker. The measurement and identification of indecision therefore a multi-method approach, including cognitive, emotional, physiological and self-concept measures.

Table 3.1

Functions of Being a Decision-Maker and Their Adaptive Goals and Challenges

Function of Decision-Maker	Adaptive Goal	Adaptive Challenge
1. Good decision outcomes	Attaining good substantive and instrumental outcomes from a decision.	Evaluating and comparing possible outcomes is computationally difficult and subject to biases and inefficiency in judgment and reasoning.
2. Good decision-making	Managing the psychological demands of decision-making alongside other goals and demands.	Decision-making is an unpleasant and affectively aversive activity, and one which taxes psychological and self-regulatory resources.
3. Good decision-maker	Maintaining a positive impression and identity as a competent and decisive decision-maker; minimising expression of indecisiveness.	Self-monitoring and impression management is effortful; self-doubt and indecision cognitions can lead to maladaptive responses which impair performance and exacerbate indecision.

Further Assembly Required

Overview of Model

Figure 3.1 sets out the proposed model of indecision and indecisiveness. Just as Rassin (2007) acknowledged in his model of indecision, this model is also incomplete. There are some other more substantive similarities between them. The proposed model

also recognises that different dispositions shape a series of indecision perceptions and processes, which are moderated by situational factors to produce a set of different behaviours. Going further than Rassin (2007), the present model emphasises that indecision is situated within the dynamic activity of decision-making. We learn how to decide by deciding and observing its results, not only instrumental outcomes but also who we are as a decision-makers and how we appear to other people. As such, a number of feedback and reinforcement loops are introduced (indicated by dotted lines).

It is these conceptual differences which lead to a distinct model of indecision and indecisiveness. Most of this chapter will be dedicated to identifying the ways in which decision-making motivations and adaptive challenges map onto the three indecision processes. However, there are some other structural features of the model which require some further explanation.

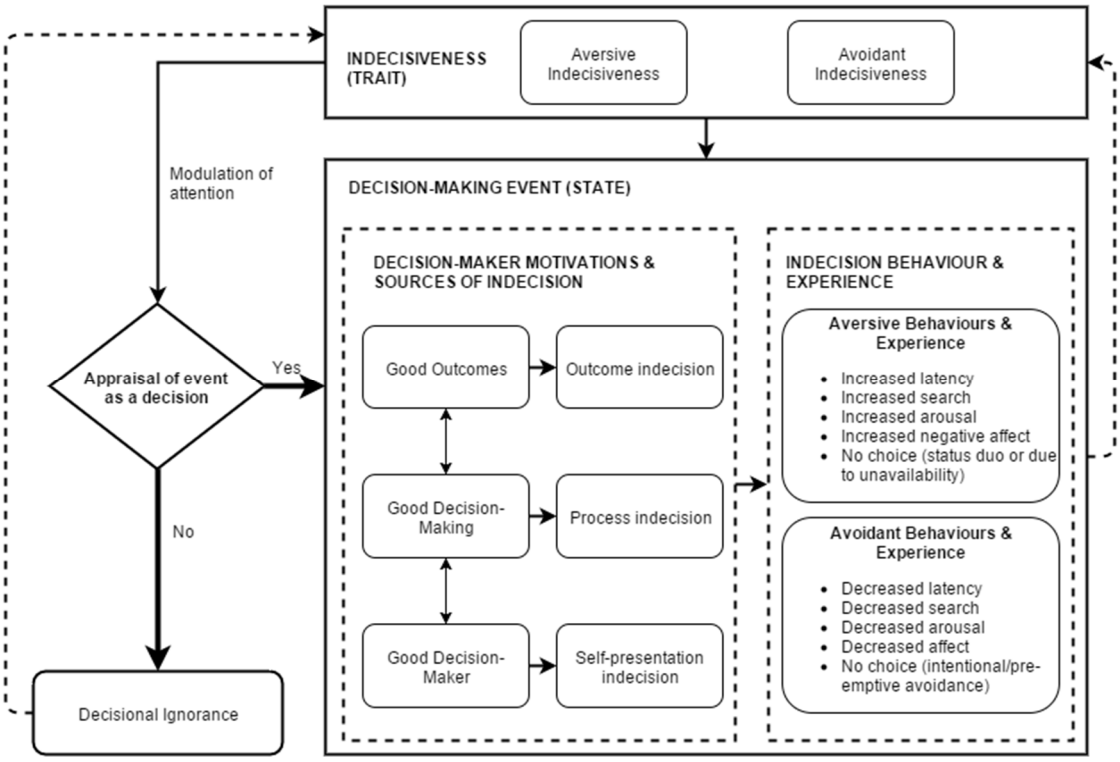


Figure 3.1. A functionalist model of indecisiveness and indecision.

Appraisal as a Decision: A Threshold Condition

The starting point in the model is whether the decision-maker appraises an event or situation as a decision. This establishes a threshold condition: that indecision depends on the activation of the decision-maker role in response to a decision. The decision-maker must be engaging in the decision *as a decision-maker*, rather than as

appraising the activity as some other kind of event which may have a different set of goals and responses (Halkjelsvik & Rise, 2015). As such, decisions which are subject to indecision are only a subset of all decisions which a person faces.

Although a detailed analysis of the processes which determine the threshold of this appraisal of "decisionality" is beyond the scope of this thesis, two brief points can be made. Firstly, the decision-maker role can be activated in response to an expected or looming decision. A decision which is on the horizon can be met with preparatory and anticipatory activity which brings the beginning of the decision-making event forward in time. This means that the activity of decision-making can be self-initiated, rather than being merely responsive to decisions which are imposed onto a decision-maker.

Secondly, it is worth noting that both Janis & Mann (1977) and Beach (2010) refer to this initial appraisal as triggered by a felt sense of disruption or discrepancy. Reed (1985), excludes from consideration decisions which are not deliberate but are so automatic that they "[do] not demand conscious consideration" (p. 175). Incidentally, this also agrees with Derrida's understanding of decision-making discussed in Chapter 1 (Rubenstein, 2008),

Wansink & Sobal (2007), for instance, found that although participants on average estimated that they made only 14 food-related decisions per day, more than 226 decisions on average could be identified objectively from their behaviour. In addition to the choice of *what* to eat, we make many more decisions about *when* to eat, *where* to eat, *how much* to eat and *with whom* to eat — and even these direct decisions are likely to be the tip of the iceberg. Many of these and other choices do not reach the level of consciousness, and if they do, do not even feel like decisions at all but routine and instinctive actions (Beach, 2010). No indecision therefore attaches to such beneath-threshold decisions, although it is possible that the threshold might be crossed in the middle of an otherwise automatic decision. An otherwise mindless and well-rehearsed task like getting dressed for work may give rise to a conscious decision appraisal and thus different forms of indecision. Choosing what to wear for an important meeting might be made more difficult by time pressure (running late) and a frustration about being indecisive which makes the choice all the more difficult.

Shiloh & Melamed (1998) observed that there are individual differences in the perception of decisions as decisions. One such predictor is trait anxiety, which increases number of recalled decisions and perceived decisional conflict. Given the overlaps between anxiety and indecisiveness, which may be on account of a common

attentional component, the model proposes that aversive indecisiveness similarly decreases the threshold for the appraisal of decisionality.

However, the model leaves open the possibility that very low levels of indecisiveness might have the opposite effect, raising the appraisal threshold to such an extent that even significant decisions are not appraised as decisions. This would mean that there is no conscious awareness of the decision nor the activation of the decision-maker role at all. Whether the lack of appraisal occurs as a result of the mundaneness of the decision or because of a misplaced threshold, the result might be labelled as *decisional ignorance*. Such ignorance may be adaptive, where there is no need for the decision-maker to be aware of the decision as a decision. At other times, decisional ignorance may be maladaptive and lead to a lack of an appropriate response by the decision-maker. This could take the form of a lack of action, or the restraint of impulsive action.

Decisional ignorance could create a state of avolition and disinterestedness such that even beneficial decisions available to the decision-maker are not identified and acted upon. Alternatively, decisional ignorance could bypass the proper inhibitory role of decision-making which forces deliberation and subsequent action informed by an awareness of the decision-maker's goals. These possibilities, lying outside the problems of decision difficulty, are best left for another project.

Trait and State Revisited

The model makes a clear distinction between trait and state forms of decision difficulty. This is consistent with the literature which affirms that decision difficulty has *state dependent* and *state independent* components. As shown in Figure 3.1, indecision is experienced within a decision event. While indecisiveness is not dependent on a state of deciding, it precedes and permeates the decision activity, and is shaped by the full gamut of decisional consequences as part of a feedback and learning process.

To assist in re-evaluating the state-trait distinction, Cattell's (1966) dichotomy between state and trait anxiety is a useful analogy. State anxiety is a transitory emotional state associated with consciously perceived feelings of apprehension, dread and tension and which coincides with autonomic arousal (Spielberger, 1966). State anxiety, in the words of the State-Trait Anxiety Inventory (STAI), which popularised the distinction, is felt "right now, at this moment" (Spielberger, 1983). On the other

hand, trait anxiety is defined as a stable tendency to perceive stressful situations as dangerous or threatening. People high in trait anxiety also tend to respond to stressful situations with a greater intensity and frequency of state anxiety (Spielberger & Sydeman, 1994). Trait and state anxiety are not seen strictly as different kinds of anxiety, nor does the dichotomy take away from the multidimensionality of both state and trait anxiety (Endler & Kocovski, 2001). Rather, they are related in terms of expectancy and experience, with trait anxiety priming state anxiety.

Accordingly, trait anxiety cannot be defined only by reference to the frequency of state anxiety. A person frequently experiencing state anxiety is indeed likely also to have high trait anxiety, as is the case for the relationship between frequent indecision and indecisiveness, but this is description rather than explanation. Instead, there is converging cognitive, neuropsychological and clinical evidence that state and trait anxiety differ in terms of how they modulate and bias attention (Pacheco-Unguetti, Acosta, Callejas, & Lupiáñez, 2010; Eysenck, Derakshan, Santos, & Calvo, 2007; Egloff & Hock, 2001). For instance, while state anxiety increases the threat value assigned to a stimulus or situation, trait anxiety gives rise to an ongoing tendency to direct attention toward the source of threat (Bar Haim et al., 2007; Clarke, MacLeod, & Shirazee, 2008). This constant attention also occurs in the absence of threat, suggesting that trait anxiety is associated with impaired attentional control resulting in a failure to inhibit responses to distractors (Bishop, 2008).

The consequences of such attentional biases and their behavioural consequences can be highly dysfunctional. For instance, cognitive models of anxiety disorders point to the role of biased information processing — often inflating the likelihood or extent of harm — in maintaining pathological anxiety. The resultant behavioural avoidance only increases the anticipation of threat and the maintenance escalation of distress (MacLeod & Mathews, 2012; Beck & Clark, 1997). As should be expected, therapeutic techniques for anxiety which seek to modify attentional biases have shown some promise (Heeren, Mogoaşe, Philippot, & McNally, 2015).

The aim here is not to inject this anxiety research directly into indecision and indecisiveness, but to apply the state/trait distinction by analogy. Having said this, it has already been shown that anxiety is an important if not unavoidable component of indecisiveness as well as indecision (Hartley & Phelps, 2012; Fuqua et al., 1988; cf. Germeijs & Verschueren, 2011). However, the constructs remain distinct. What is important here is the relationship between state and trait anxiety and the common role of

attention. Beyond chronicity and frequency, indecisiveness should be considered as a state-independent tendency to bias attention towards decisions and decision-making. As already discussed, indecisiveness can modify the threshold for the appraisal of a decision as a decision. Indecisiveness also affects the decision-making event and the indecision processes which may emerge, although at this point it becomes improper to talk about indecisiveness as if there is only one process at work.

Indecisiveness

The present model adopts the categorisation of indecisiveness into aversive and avoidant forms, proposed by Spunt et al. (2009). Despite the limitations of the items in the IS-R and some concerns in the way that the item-factor loadings were interpreted, the distinction between excitatory and inhibitory (or approach and withdrawal) dimensions has a solid grounding in the motivational literature which warrants further consideration here. The specific empirical and psychometric concerns will be revisited as a core part of Study 1.

Spunt et al.'s (2009) exploration of aversive and avoidant forms of indecisiveness was based on rRST and its underlying biopsychosocial theory of personality (Gray, 1970; Gray & McNaughton, 2000; Corr, 2004), particularly as measured using the BIS/BAS Scales (Carver & White, 1994). In effect, this study looked at the relationship between dispositional indecisiveness and dispositional motivational preferences. The present model focuses instead on the effect of indecisiveness on the situational motivations and responses of the decision-maker. In addition to modifying the threshold for initial appraisals of decisions, individual differences in the two components of indecisiveness therefore differentially influence indecision processes depending on the salient functional goals of the decision-maker.

Aversive Indecisiveness

Both forms of indecisiveness involved biased attention to threat, but relate to threats to different functions of the decision-making activity. Spunt et al. (2009) found that aversive indecisiveness was associated with increased sensitivity on the BIS scale. While behaviourally associated with inhibitory responses, the motivational basis of the BIS is to monitor for and avoid behaviour and situations which may lead to negative or painful outcomes and impaired self-esteem (Quilty & Oakman, 2004). The BIS system is therefore associated with heightened self-monitoring in relation to potential errors or

mistakes which may lead to punishment and aversive experience (Corr, 2004; Carver & White, 1994).

Extending and applying this to indecisiveness, it may be hypothesised that aversive indecisiveness is sensitive to threats to the self which accompany the activity of deciding. Such threats are distinct from those which attach to the outcomes of deciding. That is, decision-making is an activity which itself has significant negative consequences in terms of possible punishment, aversive experience, and impaired self-esteem from poor performance. High aversive indecisiveness would therefore correspond with an expectation of difficulty and negative affect during the decision-making process. While aversive indecisiveness also has an avoidant dimension, just as the BIS is associated with behavioural avoidance (Gray & McNaughton, 2000), this is motivated towards the avoidance of negative affect and experience, rather than a preference for the avoidance of decisions as a strategic activity.

Elaydi (2006) exclusively addresses the aversive experience of decision-making in his indecisiveness scale. As discussed in Chapter 2, this scale contains items such as "I am having an emotionally difficult time with making a decision and feel trapped in the decision-making process". The paralysis of decision-making can create an "emotional prison" (p. 1366). While this emphasis on affect and dysregulation in decision-making is a welcome addition to the literature, it is also evident that Elaydi (2006) is not addressing indecisiveness as much as indecision. This scale is not a dispositional state-independent measure but is completed in relation to "the biggest decision" that the participant is currently facing (p. 1369). Nonetheless, the tenor of the items gives a sense of the aversive experiences of being a decision-maker, which can be generalised to an anticipation of being "stuck", trapped and stressed during decision-making.

Avoidant Indecisiveness

In avoidant indecisiveness, it is hypothesised that decision-making in general — rather than experiences within an instance of decision-making — is a source of threat. Regardless of the content or process of the decision, the act of deciding is seen as a threat to adaptive functioning. As such, avoidant indecisiveness sensitises the decision-maker to responses which withdraw from the entire activity of deciding. These avoidant proclivities are not incompatible with the increased attention directed towards decision-making. Rather, persons high on avoidant indecisiveness direct threat-oriented

attention to decisions in order to avoid or control them. Similar processes have been observed in trait anxiety, where people high in trait anxiety show early attentional bias and engagement with threat, which is quickly followed by disengagement and avoidance (Koster et al., 2006).

There are some similarities between avoidant indecisiveness and Beattie, Baron, Hershey, & Spranca's (1994) description of aversion as a decision attitude. This attitude is described as a desire to avoid making decisions "independent of any consequence that they achieve" (p. 130). Decision aversion, however, just like Anderson's (2003) notion of decision avoidance, can be situational as well as dispositional, and is a much wider construct which encompasses processes which are located within aversive indecisiveness here (e.g., a fear of blame).

A better understanding is therefore needed of the attentional, motivational and identity-relevant bases of avoidant indecisiveness at the dispositional level. Two contrasting possibilities stand out. Firstly, avoidant indecisiveness may have generalised from past decision-making experiences where there has been a conflict between an instrumentalist motivation and the awareness of one's own inability or incapacity to bring about the best outcomes. Previous experiences where decision-making has been particularly costly, psychologically or socially, may also be internalised as a belief that there are more efficient ways to achieve something than by being an intentional decision-maker. As such, avoiding and withdrawing from decisions may become a default strategic preference. Avoiding decision-making or not being personally caught up in decisions may be seen as the best (or least bad) way in which to achieve the person's overall goals. Accordingly, the monitoring processes activated by avoidant indecisiveness involve threat-oriented cognitions towards anticipated decisions.

Alternatively, avoidant indecisiveness may simply reflect low dispositional levels of goal pursuit. Some evidence for this can be found from Spunt et al.'s (2009) results where avoidant indecisiveness was associated with decreasing BAS sensitivity. The BAS is the appetitive goal-directed aspect of motivation which stands in contrast with the BIS. However, this raises the question of whether this would be indecisiveness at all. As already flagged above, the present model posits that both aversive and avoidant indecisiveness involve a heightened vigilance and threat response to decision-making. Low levels of appetitive drive would not necessarily precede an increase in attention and monitoring. As such, the first goal-obstructive pathway to avoidant

indecisiveness seems more plausible from a functionalist perspective. Both possibilities, however, need further investigation.

Other Dispositional Influences

These two forms of indecisiveness in the proposed model can be regarded not only as *specific* traits (i.e., they relate directly and only to the activity of decision-making), but also as *global* traits (i.e., they apply to all types of decisions which are appraised as decisions, and not just in certain domains or contexts). However, other dispositional predictors would also be relevant to each indecision process shown in the model. For example, following Rassin's (2007) model, a dispositional intolerance of uncertainty may affect the decision-maker's ability to form the judgments required for an instrumentally good outcome. Intolerance of uncertainty is a broader trait construct than indecisiveness and as such, these traits influences are not included in the model. Relevant non-specific traits will be discussed below for each indecision process.

Indecision Processes

Three indecision processes are included in the model: outcome indecision, process indecision and self-presentation indecision. Each of these follows from the challenges of attaining the different functional goals of the decision-maker, as shown in Table 3.1: attaining good decision outcomes, being a good navigator of the decision-making process, and being a good decision-maker, respectively. These three processes are interdependent and may occur sequentially or concurrently within the decision-making event, rather than being separate categories of indecision. The difficulty of outcome-oriented choice may make salient the difficulties of managing the psychological demands of decision-making, as well as a need to regulate how indecisive one is appearing. Similarly, an excessive focus on self-presentation as a decision-maker may impede the ability to make good choices.

Good Decision Outcomes: Outcome Indecision

Outcome indecision is the collision between the desire for a good decisional outcome and the difficulty of achieving this. The effort and psychological resources needed to seek, comprehend and evaluate the information needed to make an optimal choice, usually under conditions of uncertainty, are substantial. As the JDM literature has always recognised, good outcomes are not always possible, let alone those which

maximise utility. Moreover, human decision-makers often act in ways which undermine the attainment of optimal substantive outcomes. Outcome indecision, however, cannot be just bad or biased decision-making. This would be far too broad an interpretation and would eliminate any meaningful distinction between indecision and decision-making, as already foreshadowed in Chapter 1.

Rassin's (2007) model provides one way forward, despite the absence of a clear definition of what indecision is, as discussed in Chapter 2. The model assumes that the primary motivation and challenge of the decision-maker is in the instrumental dimension of choice. As such, the three indecision processes (lack of information, valuation problems and outcome and outcome uncertainty) are grounded in the content of the decision problem and how it is evaluated. However, these only result in indecision on the basis of behaviours or decisional outcomes (specifically delay, a lack of choice, informational tunnelling or post-decisional processes such as regret or instability) which are unfavourable compared with some normative standard. Some standard of rationality, as discussed in Chapter 1, is therefore a necessary (or perhaps the only) benchmark for identifying and evaluating outcome indecision.

Patalano & Wengrovitz (2007), whose study was also reviewed in Chapter 2, adopt a similar approach. Compared with Rassin (2007), who identified maximising as a disposition which affected search and choice behaviour (as part of a perceived lack of information), they instead explained outcome indecision as a satisficing process with an unproductively high threshold:

> Choice difficulty might arise because it is not clear what to do when no alternatives exceed one's threshold. That is, a satisficing procedure does not clearly produce choice alternatives that are the best available if they are not also above threshold. The only real recourse is to delay choice. In one way, delay can be thought of a decision to continue the search for the ideal alternative (p. 421).

What is unsaid here is that whether there is "delay" or not, and therefore indecision or not, can only be made based on some comparison. Patalano & Wengrovitz (2007) made such comparisons using dichotomised indecisiveness scores, but indecision nonetheless has to be inferred from the outcome back to the decision-maker.

Situational antecedents. Situational antecedents for outcome indecision are therefore too many to enumerate: they could be anything known in the literature that

might affect decision-making behaviour and outcomes. As Chapter 2 noted, there has been a propensity to identify situational factors which result in latency and increased information search. This is based on the assumption that indecision necessarily involves increased decision time, irresolution or a lack of choice, and that the increased cognitive effort required results in greater information search and processing.

However, the model proposed here also recognises that indecision also could be expressed as avoidance or withdrawal behaviour. That is, the outcome of indecision could be reduced decision time or information processing. Anderson's (2003) description of decision avoidance most closely approximates this part of outcome indecision. Difficulty in evaluating and selecting options may lead to inaction as the default course of action. While this is not the same as a disengaged or avoidant decision process as part of indecision, nor is it where inaction is a rational choice as discussed below, it shows that a lack of instrumental activity can also be consistent with outcome indecision.

Outcome indecision is therefore a necessary part of a theory of indecision, but it is less interesting for present purposes. This aspect of indecision can be examined without requiring much recourse to the psychological appraisals and experience of deciding. Having said this, there is room for future examination of the role of preference construction in outcome indecision. As discussed in Chapter 1, the absurdity of Buridan's Ass is because a human decision-maker could not indefinitely fail to find (or invent) a way of differentiating between otherwise equal alternatives in order to construct a preference hierarchy to inform choice and resolution. The theory and evidence on the construction of preferences (Lichtenstein & Slovic, 2006) could be extended to look at how decision-makers dynamically order, or fail to order, their preferences as part of indecision. Such an approach would begin with a rational approach of outcomes but must acknowledge that preference construction may be influenced by other goals (e.g., an arbitrary ordering of preferences to bring an end to the decision-making activity).

Choosing not to choose? It is nonetheless important to set aside a potential distraction which arises from the instrumental basis of this form of indecision. What might look like indecision may itself be an entirely rational choice. That is, if the expected utility of not (yet) deciding outweighs the utility of choosing any of the available options, then it would arguably be entirely rational to choose not to choose (Sunstein, 2015). Indecision, as the deferral of choice or non-choice might therefore be

seen as just one equal option, explicit or implicit, within the available set of alternatives options (Tversky & Shafir, 1992; Shafir et al., 1993; Dhar, 1997; Anderson, 2003).

Such a view of indecision as explicit deferral is consistent with the tendency in the JDM literature to see any decision as the turning point between two states, rather than a state or event in itself. Non-choice has the advantage of being easily identified, but whether this should be considered as indecision remains doubtful. McCall (1987) acknowledges that this reasoning is attractive in its simplicity, but argues that without a failure of choice, there is no indecision. A decision is still being made, whereas indecision cannot itself be chosen. As Sartre (1946/2007) observed, observation that choosing not to choose is still a choice. This situation can be contrasted with non-decision which occurs unintentionally due to delay or exhaustive search past a decision deadline. In this case, no decision is made and the resultant state can be rightly characterised as indecision.

Nor is all decisional delay necessarily the same as indecision. The intentional choice to defer choice or action can be done for adaptive reasons which have little to do with decision *difficulty*. Such choices may be maladaptive for other reasons, but they are not necessarily a failure of the motivation to obtain good outcomes. They may be completely consistent with such goals. Tykocinski & Ruffle (2003), for instance, recount a tale of purposeful delay of an ultimate decision which could not be characterised as indecision under the present model, :

> A feudal tenant tells a friend that he was ordered by his squire to teach the squire's dog to speak.
> "What did you say?" asked the alarmed friend.
> "I agreed, but I asked that the dog stay in my house for three years so I can teach it".
> "And what will you do in three years' time?" asked his friend.
> "In three years, God willing, either the dog will die or the squire will die or they may both be dead", replied the tenant (p. 156).

Together, these are important boundary conditions for this first category of indecision. Incidentally, they also show the problems of relying on outcome measures, without understanding decision-maker, to identify indecision. Outcome indecision is found in the process of grappling with the possible outcomes. It must be outcome-*oriented*, but must be more than an outcome in itself. Evaluating whether or not to opt

out of or defer choice can be difficult. It is this difficulty, rather than the completed choice to defer choice, which is characteristic of this category of indecision. Without difficulty, mere delay or non-choice is not indecision.

Too much choice? Within a consequentialist framework, indecision as delay can be generally predicted to be proportionate to the computational complexity of the available alternatives. As the volume of the information relating to the alternatives or the number of attributes increases, so too would the expected level of indecision. The now well-known literature on the "too-much-choice" or "choice overload" effect provide some qualified examples of such systematic situational influences on outcome indecision.

Iyengar & Lepper (2000) found that shoppers who were presented with 24 different flavours of jam were less likely to purchase one of the available options, compared with those who only saw six flavours. Subsequent studies using essay-writing tasks and a chocolate tasting study also showed that mere set size was sufficient to produce indecision-like behaviour, even though participants consistently expressed a consistent preference for larger choice sets. More choice seemed to result in greater behavioural indecision, in terms of an absence of choice, despite the presence of good options.

In another real-life example, Lenton & Francesconi (2011) found similar results after analysing partner choices from commercial heterosexual speed-dating events. Increased choice variety in personal attributes (e.g., personality, attractiveness, age) predicted fewer "match" proposals being made, consistent with the too-much-choice effect. In addition, greater variance in attributes was also associated with the probability that a person would make no proposals during the event. Ending the event by making no proposals could be taken as an indicator of outcome indecision, on the assumption that speed-dating participants want to make proposals in order to meet the best possible potential romantic partners.

However, a meta-analysis by Scheibehenne, Greifenender & Todd (2010) of 50 too-much-choice studies found that the overall effect size was not significantly different from zero ($D = .02$, $CI_{95} = [-.09, .12]$, $N = 5036$). If it is a phenomenon at all, the effect is certainly not as robust as it is often claimed especially in the applied or popular literature on decision-making. In explaining the variation in observed effects, Scheibehenne et al. (2010) point to some methodological limitations of some of the studies (e.g., small sample sizes and some evidence of publication bias). However, they

focus their attention on the idiosyncratic features of the decision environment across different studies. The attributes of the decision alone are not sufficient to reliably account for the too-much-choice effect, and therefore for indecision. That is, decision-making behaviour is always an interaction between person and environment, not merely the attributes of the choice set.

Scheibehenne et al. (2010) suggest that it is the complexity and confusion of options and their distribution for the decision-maker which creates the too-much-choice effect, more so than just the size of the choice set in the abstract (Greifeneder, Scheibehenne & Kleber, 2010; Jessup, Veinott, Todd, & Busemeyer, 2009; Schwartz, 2004). The context in which the decision is made is also relevant. Such contextual factors include how the information is categorised and arranged, the similarity of the choices, the number and distribution of attributes, and the presence or absence of time pressure. Once again, however, these factors are not specific to indecision but have a long and well-documented history in the wider JDM discipline (Plous, 1993).

Moreover, Scheibehenne et al. (2010) also gently suggest that how participants appraise the decision-making activity may be important, for instance if participants knew that they had to justify the choices which they made (Shafir et al., 1993). This tempers the initial enthusiasm for purely situationally-determined indecision, and returns to the earlier and more qualified observation by Tversky & Shafir (1992), that "it is *sometimes* [emphasis added] possible to manipulate conflict", and by extension, indecision, "by varying the relative attractiveness of the available options" (p. 358). Even for outcome decision, recourse to information processing by the decision-maker, not just the information, is required. Yet even more than this is needed to account for indecision, necessitating the recognition of other indecision processes.

Adding to Scheibehenne et al.'s (2010) qualification of the too-much-choice effect is Mochon's (2013) description of *single-option aversion*. This phenomenon occurs where the decision-maker exhibits indecision behaviours (in terms of choice deferral and increased information seeking) even though only one attractive option is being considered. No other options are in the choice set, so there is no comparison between alternatives. Indeed, choice may be *more* likely if competing options are introduced into the choice set, contrary to the rational model and other findings on set size. It is therefore not only too much choice but also not enough choice which can lead to indecision. With no explanation possible within the consequentialist framework,

Mochon (2013) concluded that "some other unexplored psychological force" (p. 563) drives this tendency towards indecision.

Moreover, Mochon's (2013) studies indicate that such a psychological force must explain *motivations* for additional search, rather than just relative valuation of options. This is an important admission which challenges the descriptive and normative weight of the rational model for indecision. In both the "too much choice" and single-option aversion paradigms, there is an acknowledgement of the need to include the psychological and the individual characteristics of the decision-maker, rather than general patterns of heuristics and biases.

Indecisiveness and dispositional predictors. The informational attributes of a decision situation should therefore not be regarded as a sufficient cause of indecision, at least in the case of human decision-makers in real-life situations. At the very least, as both Scheibehenne et al. (2010) and Mochon (2013) recognised, there are individual differences in how people seek out and make use of choice information which contribute to this form of indecision. Rassin (2007) identified a number of these dispositional predictors in his model. These included trait levels of perfectionism, intolerance of uncertainty and maximisation.

Countless other relevant facets of personality or individual difference could be identified, however, and it may be undesirable to try to enumerate them. It makes sense within Rassin's (2007) outcome-oriented model of indecision to identify specific trait predictors for each of his three processes. The present model, by contrast, is less interested in the mechanics of outcome indecision in particular. Listing relevant traits may have the unintended effect of being too prescriptive about causal pathways which may be a distraction from the functionalist position being taken. Besides, relevant predictors for outcome indecision extend well beyond indecisiveness to other domains. They may be as general as global neuropsychological functioning and intelligence. Individual differences in working memory, processing speed, overall verbal or non-verbal reasoning abilities could not be discounted as having a relevant effect on how people go about attaining good decision outcomes.

On top of the effect of these dispositional and individual difference variables, both avoidant and aversive indecisiveness also have an indirect role in eliciting outcome decision. However, these dimensions of indecisiveness may be less important here compared with their influence on the two other indecision processes. Strictly, the effect of aversive and avoidant indecisiveness would generally be considered as non-

consequentialist influences which bias the process of rational judgment and choice. Aversive indecisiveness may increase the sensitivity to anticipatory and anticipated emotions which act as information informing the calculus of optimal outcomes (Loewenstein, Weber, Hsee, & Weber, 2001). The attentional moderation of both forms of indecisiveness may also affect the selection and weighting of cues relevant to decision outcomes. This result of this may not be optimal, as anticipated by the heuristics and biases research, increasing the likelihood of indecision as delayed, deferred or inefficient choice. Finally, avoidant and aversive indecisiveness may also produce outcome indecision via other indecision pathways, which should now be considered.

Good Decision-Making: Process Indecision

Process indecision occurs when the desire to be a good decision-maker (which, to be clear, is not the same thing as achieving good decisional outcomes) is met with struggle and difficulty in the activity of deciding. Decision-making unfolds as an event over time alongside other concurrent adaptive challenges and demands to the person. Deciding is therefore a costly activity, requiring not only significant cognitive effort but also time, opportunity and interpersonal costs. There is therefore a motivation for a decision-maker to meet the demands of the decision activity in a way that is not unduly aversive and stressful, but rather draws on an appropriate level of cognitive and psychological resources, and also maintains the integrity of the self in relation to other goals and demands.

These motivations may be hindered by the immediacy of negative affect while deciding, together with the associated action tendencies and motivational effects of such distress. Deciding well may also be impaired by the presence of competing or conflicting decision-making goals and their demands on finite psychological resources.

Tversky & Shafir (1992), in their study of deferred choice, recognised that the freedom to choose carries with it a corresponding burden of being a decision-maker. Such conflict arises "... because a person does not always know how to trade off costs against benefits, risk against value, and immediate satisfaction against future discomfort" (p. 358). While this description still adopts an instrumental view of decision-making — that immediate outcomes are how decisions should be evaluated — it recognises that decision-makers are not always willing or capable of attaining instrumental goals, even if they want to. Process indecision is therefore not predicated

on the assumption that people enter a decision situation knowing how to compare alternatives and choose the best.

Process indecision has two forms: *difficulty* and *depletion*. Like most components in the present model of indecision, both forms of process indecision are related. One might cause or moderate the other. Process indecision is often felt as the aversive experience of *difficulty*, of being "stuck", because the decision activity is felt to be a stressful and unwanted intrusion. Process indecision may also arise because the decision-maker is temporarily incapable of deciding well because her or his self-regulatory resources are *depleted* or perceived to be insufficient. This self-regulatory exertion and depletion is unlikely to be conscious, but explains why the goal of being a good decision-maker can become thwarted.

Differentiating outcomes and process. This indecision process places the spotlight on the act of deciding, of being a decision-maker, rather than making a decision in terms of a donkey passively being pulled in opposing directions by abstract forces. Reed (1976), writing about indecision in OCD, shared the observation that "it is not so much *decisions* that cause difficulties for [people with obsessional symptoms] as *decisions about decisions*" (p. 444). He observed that even people presenting with clinical levels of decision difficulty as part of obsessive or compulsive psychopathology generally knew what and when to choose. However, these people nonetheless had difficulty acting upon these decisions. They struggled with being the decision-maker who carries out a specific decision, which otherwise remains only an abstract and unrealised possibility.

This is as Derrida and Kierkegaard recognised: that the difference between deciding and acting on a decision can be terrifying. This gap can sometimes grow to be a chasm that cannot readily be crossed. Even in less extreme situations, it suggests that the active process of decision-making is a performative activity. As Patalano & Wengrovitz (2007) acknowledged, decision-making is as much about managing the difficult process of selection and action as it is in mentally selecting the best alternative.

Schlösser, Dunning, & Fetchenhauer's (2013) distinction between anticipated and immediate emotions in decision-making is instructive in understanding the significance of the decision activity in indecision. In their view, *anticipated emotions* are captured by the question, "How would you feel when the decision for alternative X leads to consequence Y?" (p. 13). This is the role of affect in rationally consequentialist

decision-making. Difficulty in integrating affective information into she utility calculus could result in the suboptimal attainment of outcomes.

On the other hand, *immediate emotions* are identified through the question "How do you feel right now about choosing alternative X?" (p. 13). However, this question still connects the immediate affective response with a potential future outcome. There is therefore a third question which could be asked, directed to the immediate experience of being the decision-maker in the decision. This might be framed as, "How do you feel *right now* about being the decision-maker making this decision?" Or, without the language of conscious affective experience, "What is going on right now for you while making this decision?" This is an only a conjectural question, since the validity of verbalised accounts of such inner experiences dubious (Nisbett & Wilson, 1977). It is however, important to maintain the right object of analysis, especially since so much of the literature automatically gravitates to the instrumental role of decision-making.

Schlösser et al.'s (2013) distinctions also point to the ways in which process indecision can be triggered by outcome indecision. The delay and cognitive effort from processing the choice information can draw attention to the difficulty of the decision, which is experienced as aversion. However, process indecision can also precede outcome indecision. Regardless of the decision content and alternatives, and even before entering into the state of deciding, the prospect of being a decision-maker can be coloured by aversive expectations or the anticipation of incapacity.

Aversive experience of deciding. Despite the examples given above, being a decision-maker can sometimes be a positive, hedonic experience. Decision-making can be a pleasurable activity because of the curiosity, excitement or anticipation driven by uncertainty. A person may wish to prolong this state, for instance, in the process of picking the best possible gift for a loved one (Schlösser et al., 2013; Wilson, Centerbar, Kermer, & Gilbert, 2005; Smithson, 2008; cf. Winkielman, Schwarz, Fazendeiro, & Reber, 2003). This cannot be considered to be process indecision, although there may be a point where it becomes outcome indecision, when the hedonic drive interferes with the selection process through delay or a lack of choice.

However, the positive experience of decision-making tends to be overshadowed by the negative. Janis & Mann (1977) describe the "hot" aversive experience of decision-making, precipitated by a decisional conflict, in these terms:

> The most prominent symptoms of such conflicts are hesitation, vacillation, feelings of uncertainty, and signs of acute emotional stress whenever the

> decision comes within the focus of attention. A major subjective characteristic of decisional conflicts is an unpleasant feeling of distress (p. 46).

This description by makes it clear that it is the distress and feeling of being "stuck" in the decision process which is salient to the person as a decision-maker and a reluctant chooser, not an omniscient and detached calculator only interested in the outcomes. Accordingly, the risk-as-feelings approach, although helpfully drawing attention to the role of anticipatory emotion during decision-making (Loewenstein et al., 2001; Mellers, 2000; Mellers & McGraw, 2001), is nonetheless inadequate. The affective input in this approach is still directed towards the selection of some substantive outcome, rather than reflected onto the role of being the decision-maker.

Rather, as Schlösser et al. (2013) recognised, process indecision requires a recognition that decision-making under uncertainty is influenced not only by the anticipated risk of outcomes but the "riskless" contemplation of available options. Emotions can therefore be caused by the act of deciding, quite independently of the possible outcomes of the decision. This is not merely a non-consequentialist influence on outcomes, but a discrete and psychologically significant process with a wide range of coping responses and consequences, as Janis & Mann (1977) identified with their coping styles.

Milgram & Tenne (2000) also provide a good description of the aversive experience of the decision-making. They describe *tension* as the affective response of discomfort, distress or anxiety that accompanies the decision-making process, separate to the selection difficulty of arriving at the best outcome. Moreover, they describe indecision is described as a feeling of mental "clutter" (p. 142) due to the intrusiveness of irresolution, especially when multiple decisions or other goal-directed activities are taking place at the same time. Process indecision also involves a feeling of being "trapped" and "hassled" (p. 142) due to a sense of a loss of control that comes from knowing *that* one must make a decision but not knowing how *what* or *how* to choose. This sense of tension is further divided into the discomfort or anxiety which occurs during the process of deciding and that which persists or arises after making the decision (e.g., post-decisional regret, cf. anticipatory regret, discussed below). It is the former kind of tension occurring in the course of being a decision-maker which is most relevant to process indecision.

Perhaps the most dramatic description of process indecision is found in Elaydi's (2006) description of indecision which was introduced in Chapter 2. In contrast with

the other literature, Elaydi (2006) firmly places the focus on the subjective and affective experience of indecision rather than on the content or outcomes of the decision:

> When facing a difficult decision, negative concurrent emotions may be so overwhelming that the individual becomes emotionally paralyzed during the decision-making process. It is this emotional prison which best exemplifies indecisiveness. …. The immediacy and vividness of the regret that might occur due to an unwanted outcome may trigger emotions during the decision-making process, such as anxiety, dread, fear and confusion. The individual's experience of these negative concurrent emotions may be so overwhelming that he or she is unable to make a decision and feels that they are stuck in a decisional prison. This state of indecisiveness is dysfunctional, difficult to maintain, and a threat to the decision-making process. (pp. 1366–1367)[9]

This experience of stress and tension is consistent with the nature of agitation-related negative emotions, which include fear, anxiety, worry and edginess, and are associated with the presence or expectation of negative outcomes. Higgins' (1987) self-discrepancy theory, however, points out that these negative outcomes are not the utility-based outcomes of action and choice. Rather, the critical outcome is how a situation (including a decision) illuminates the congruency or discrepancy between the person's *actual self* and their *ought self*. For a decision-maker, the negative affective experience of agitation whilst deciding may be associated with a failure to live up to the duty of a decision-maker to choose well in any given decision. At the dispositional level, Orellana-Damacela, Tindale, & Suárez-Balcázar (2000) found that an actual/ought-self discrepancy was associated with decisional procrastination and indecisiveness. This finding highlights the importance of the self-construct as a decision-maker as a potential source of distress and impairment of goals, although more work is needed as it relates to situational indecision.

The experience of such distress during decision-making does not go unchecked. Self-regulatory processes are activated to mitigate the effects of negative affect. Sirois & Pychyl (2013), for example, suggested that procrastination could be motivated by short-term mood repair. While procrastination is not the same as indecision, they share a similar conceptual application at this point. Attending to negative affect and low

[9] Note that Elaydi (2006) uses the term "indecisiveness" to refer to the state of indecision, rather than the trait.

mood, which may be caused by the unpleasantness of decision-making, may take precedence over achieving other desired goals. Inaction, disengagement and the generation of downward counterfactual thoughts may temporarily help the decision-maker feel better about themselves and the difficult decision. This line of reasoning continues the theme of seeing the decision-maker through different expressions of the self. Here, the immediate benefit of mood repair to the present self comes at the expense of the longer-term goals of the future self. Tice & Bratslavsky (2000) similarly also found that emotion regulation can take priority over other self-control goals. This overall failure of self-control would undermine the motivation to be a good decision-maker, even if there is some short-term relief to be had.

In addition to procrastination, there may be a sense of relief experienced when *any* decision is made, not just the best possible decision. Concluding the decision-making activity also takes away the burden of being a decision-maker. Amidst the tension and stress of choice, selecting anything and even choosing randomly may appear to be the preferable strategy. Ultimately, this may be counterproductive to being a good decision-maker — that is, someone who can manage the challenges of the decision-making activity without being overwhelmed by agitation and negative self-evaluations, and employing maladaptive coping strategies in response.

Despite this important role of affect in process indecision, relatively little is known about specific qualities of emotion involved. While more standardised inquiry is required, there remains the possibility that the affective dimension of process indecision might even be characterised as a distinct emotion. Process indecision arguably has a unique immediate and discrete phenomenology, appraisal structure and action tendencies (Ellsworth & Scherer, 2003). Recognising the conscious experience of process indecision as an emotion may be possible, similar to how other information and motivation-related emotions, such as the positive emotion of curiosity or interest (Silvia, 2006; Tang, 2006; Jeong & Drolet, 2016), have been recognised. More work is needed here beyond the scope of this thesis, although it may be sufficient for now to recognise the unique experience of being a struggling and stuck decision-maker.

Regret. Regret is specific negative affective state which has a deep connection with process indecision. Regret has many flavours, including the powerful form of post-decisional regret: the feeling that one has made a bad decision and wishing that the outcomes or process were different. This would be of less importance for the immediate experience of process indecision, although post-decisional regret would

shape indecisiveness and expectations of future decisions through feedback pathways. Post-decisional regret may also extend the decision-making event, inviting opportunities for instability and apprehension about being a capable decision-maker.

More relevant to process indecision is *anticipatory regret*, which occurs during the decision-making process and is directed to the immediate experience, rather than anticipated outcomes. The connection between anticipatory regret and indecision is not always well-explained, especially from a functionalist perspective, but the behavioural evidence is consistent with the distinction between outcome and process indecision. The regret literature, more so than the JDM literature, has recognised the importance of looking at immediate affective experience during the course of decision-making. Reb (2008), for instance, showed that priming regret in participants before a decision-making task tended to produce classic indecision behaviour. Participants demonstrated significantly increased decision time and information search which was mediated through decisional vigilance (i.e., careful and conscious decision processing).

Connolly & Zeelenberg's (2002) go further with their decision justification theory (DJT) to provide a two-pronged account of regret in decision-making. Similar to the model of indecision being advanced in this chapter, DJT makes the distinction between regret occasioned by the comparative evaluation of decision outcomes (analogous to outcome indecision) and regret associated with self-blame for being a bad decision-maker (analogous to process indecision). The two forms of regret can be dissociated. Self-blame regret can still occur despite a good outcome. Alternatively, it is possible to regret the outcome without regretting the process. Both evaluative and self-blame forms of regret can be anticipatory, arising during decision-making and acting as a cognitive and affective influence on the decision-maker, rather than only occurring in the *post mortem* of a bad decision.

Pieters & Zeelenberg (2005) showed that an *intention-behaviour inconsistency*, a perceived failure to implement one's behavioural intentions following a decision, induces regret. This process is mediated by the quality of the decision process but is independent of decisional outcomes. An anticipatory intention-behaviour inconsistency — a fear of deciding *badly* — interferes with the process of decision-making, potentially undermining that which is being sought: a good and consistent process of decision-making. The result is a failure of the will or judgment as a decision-maker, like the concept of *akrasia* mentioned in Chapter 1.

Self-regulatory demand and depletion. In addition to negative affect and aversive experience, process indecision can also be the result of depleted self-regulatory resources. Being a good decision-maker requires anticipating and managing the demands of deciding, but only finite resources are available. There are several key pathways towards self-regulatory depletion in process indecision.

Limited capacity: Decision fatigue. The simplest cause of depletion is the activity of decision-making itself. Decision-making by its very nature is effortful and depletes self-regulatory resources. Vohs et al. (2000, 2008) and Baumeister et al. (1998) recognised that active choice rapidly exhausts a person's limited self-regulatory resources. The resultant state of depletion and self-regulatory fatigue can lead to impaired decision-making and indecision-like behaviours (Danziger, Levav, & Avnaim-Pesso, 2011). Depletion occurs independent of the content of the decision, as the effort is derived from common processes involved in deciding (e.g., seeking out and evaluating information, but also monitoring of the decision-maker role). As one's self-regulatory resources are generally limited in capacity (cf. Inzlicht, Schmeichel, & Macrae, 2014), if such resources are not available or replenished in time, then the performance of subsequent tasks is impaired (Schmeichel & Baumeister, 2004; Ferrari, 2001). Self-regulatory resources are also pooled across different domains and goals. As such, self-regulatory resources can be depleted through the anticipatory and metacognitive aspects of indecision (Sirois & Pychyl, 2013; Botvinick & Rosen, 2008), rather than just through the cognitive effort of selection and optimisation.

As such, indecision would be more likely if a person's ability to decide (or to decide well) is already depleted. This may be because the person has already made a series of prior decisions, temporary exhausting self-regulatory resources. Alternatively, resources may have already been used up in the attention-biased anticipation of potential decisions as mediated through indecisiveness. Both processes may result in an inability to apply the skills necessary for *how* to make the decision, resulting in process indecision.

Ferrari & Pychyl (2007) found that indecisive participants (as categorised using the DPS) showed more self-regulatory depletion after completing a cognitively demanding variant of the Stroop task. Even though indecisive participants maintained decisional accuracy in the early stages of the task, performance soon declined. This effect was not observed for decisive participants. Ferrari & Pychyl (2007) concluded that indecisive participants paid a price for monitoring and regulating their decisional

behaviour in order to be as quick and accurate as possible. Interestingly, indecisive participants seemed to anticipate that their indecision may affect performance and therefore front-loaded available resources to meet the initial demand. However, this was an ineffective coping strategy as the decision activity continued. These results suggest that the extra demands of self-monitoring of decision-making performance quickly depletes self-regulatory resources, which impairs performance and only further escalates indecision.

Appraisals of stress: Challenge and threat. An additional self-regulatory pathway to process indecision derives from the appraisal of the decision's demands relative to one's capacity and resources. Blascovich's biopsychosocial model of challenge and threat states that during an active and goal-relevant task (e.g., decision-making), an assessment is made about the demands of the task relative to the resources of the person (Blascovich & Mendes, 2000, 2010; Blascovich, 2013). If perceived resources are greater than the perceived demands, then the person experiences a state of *challenge*, which is associated with increased goal-directed approach motivation and, usually, positive affect. However, if perceived demands are greater than resources, then the person experiences a state of *threat*. This entails avoidance-oriented motivations, a preparation for damage and defeat, and the experience of negative affect (Jamieson, Nock, & Mendes, 2012).

Both challenge and threat states can be normal and adaptive experiences, rather than being a distinction between normality and pathology. However, this research shows that the experience of acute stress, is more malleable in terms of antecedents and downstream responses than may be expected. The model is also well supported by psychophysiological evidence showing that the two states have different patterns of cardiovascular activity, corresponding to different functional needs. This is explored in Chapter 5.

Remaining at the conceptual level for now, a state of threat in response to a perception of one's incapacity as a decision-maker to meet the demands of the decision would appear to be a clear antecedent of process indecision. The defensive response is consistent with behavioural, motivational and affective markers identified here: withdrawal from the stimulus, freeze behaviour and increased anxiety and negative self-evaluations. What is more important, however, is the emphasis placed on the initial appraisal of demands and resources which has a direct effect on the subsequent motivational response. While such appraisals are flexible (Jamieson et al., 2012),

judgments about the self as a decision-maker necessarily occur during salient decision activities. This pathway to process indecision is therefore not reserved for decision-makers with pathologically biased self-constructs, but can occur ordinarily depending on how the decision is appraised.

Switching decision-making mindsets. A third way in which self-regulatory depletion might occur during decision-making where the decision-maker is actively switching between different mindsets. Changing one's perspective and style of judgment and decision-making also depletes regulatory strength, even though mindset switching can also be adaptive (Hamilton, Vohs, Sellier, & Meyvis, 2011). One relevant contrasting pair of mindsets, as defined by regulatory mode theory, is *assessment* and *locomotion* (Kruglanski et al., 2000; Avnet & Higgins, 2003; Higgins, Kruglanski, & Pierro, 2003; Pierro, Giacomantonio, Pica, Kruglanski, & Higgins, 2011). In a decision-making context, assessment is a self-regulation mindset invoked when making accurate comparisons and evaluations. It involves directing attention and resources to evaluating and choosing the "right thing" to do in terms of the quality of outcomes. Locomotion, by contrast, is the aspect of self-regulation involved in allowing the person to move smoothly from state to state. Resources are especially directed to moving away from a current aversive, demanding or liminal state to a desired end-state without distraction or delay (i.e., "getting on with it"). For decision-making, the locomotion mindset means facilitating the transition from the activity of deciding (and a potential state of indecision) to the state of implementing or attaining the outcomes after the decision is made.

The two regulatory states fit well with the functionalist approach being advanced here. Assessment and locomotion correspond to the two simultaneous motivations of the decision-maker discussed so far: attaining good outcomes and being a good decision-maker, respectively. It is in this process of switching between decision-making mindsets that process indecision can arise through self-regulatory depletion.

Hamilton et al. (2011) found that switching between assessment and motivation mindsets depleted self-regulatory resources more than staying in one mindset only. Mindset switching, however, can be induced not only experimentally but spontaneously within the course of decision-making, prompted by the experience of aversion, struggle and difficulty. As Elaydi (2006) noted, one of the incongruities about the state of indecision is that it is "difficult to maintain" (p. 1367). The feeling of being "stuck" solicits additional effort to try to become unstuck. This may create a reinforcing loop of

indecision, where the initial experience of indecision leads to mindset switches between attending to the content of the decision and monitoring the process of the decision, further depleting self-regulatory resources and creating more indecision.

Choking under pressure. Process indecision as self-regulatory depletion can also be compared with the paradoxical performance effect. This is also colloquially known as "choking under pressure", often used to describe the unexpectedly poor performance by athletes and other professional performers. This phenomenon describes the unanticipated and sudden impairments in performance on familiar and well-rehearsed cognitive or motor tasks under conditions of stress or pressure (Markman, Maddox, & Worthy, 2006; Beilock & Carr, 2001; Baumeister & Showers, 1986).

Choking under pressure also applies to the performative dimension of decision-making. At the simplest level, this is reflected in the metacognitive awareness of one's own process of deciding (Yeung & Summerfield, 2012). Being a decision-maker in front of a real or imagined audience only accentuates this demonstrative dimension of deciding and adds to the pressure of deciding well, in addition to other functionalist goals.

The literature on choking under pressure is conflicted about whether choking under pressure is better explained by explicit monitoring or distraction (Beilock & Carr, 2001). In the explicit monitoring hypothesis, an otherwise familiar and fluent task is broken down into step-by-step actions with a focus on ensuring that every step is done properly and without mistake. The result of this re-proceduralisation tends to be impaired performance. The monitoring of each component of the task interferes with the performance of a task as a whole, particularly where the task is usually automated and outside of introspection, working memory and verbalisation. As Dijksterhuis & van Knippenberg (2000) observed, "focusing attention on an ongoing, automatic action is enough to terminate an action or at least to somehow hinder further execution of an action" (p. 58).

In the distraction hypothesis, attention and effort directed to the task is split with attention to other distracting cues, including those about the situation, possible consequences and the importance of performance. This consumes working memory capacity and the attentional resources needed for optimal performance. Common to both explanations is that the metacognitive monitoring of an activity can interfere with performance. Both could equally apply to decision-making as a performative activity. Attention directed to one's own role as the decision-maker can interfere with the learned

automaticity needed for the decision event to be resolved promptly, resulting in process indecision.

Time pressure. The temporal context in which deciding takes place, including at both dynamic and subjective level, can also have an effect on indecision. This needs careful explication because time has many different roles in decision-making (Ariely & Zakay, 2001). For instance, time can have an instrumental function (e.g., where time is treated as a commodity, or where the timing of an outcome changes its value, as in temporal discounting models). Individual differences in time perspective have been shown to be associated with indecisiveness (Díaz-Morales, Ferrari, & Cohen, 2008; Taber, 2013; L. Ferrari, Nota, & Soresi, 2010), with implications that the temporal attributes of the decision-making activity may be more important than previously recognised. Of course, time as a measure — taking too long to decide relative to some expectation or standard of normality — is a common behavioural indicator of indecision.

Time can also be a contextual process factor which feeds into the experience of indecision. This is known as *time stress*: an awareness of time elapsing during decision-making coupled with the appraisal that there is insufficient time to make a decision (Zakay, 1993). A wide and consistent literature shows that time stress can affect decision-making in ways which resemble indecision. For example, time stress can reduce information search, interfere with the encoding of decision information in memory, and induce non-compensatory or confirmatory search strategies (Ariely & Zakay, 2001; Janis & Mann, 1977).

While most of these findings might be more appropriate in outcome indecision, Zakay (1993) makes the important observation that time pressure is a felt experience. As a source of stress during the decision-making process, effort is needed to monitor and mitigate this stress, which, like other self-regulatory processes described above, can then deplete resources needed for effective deciding. Time stress and its self-regulatory demands can also amplify the conscious and aversive difficulty of making the decision, quite separate to the content and instrumental consequences of choice.

Inbar, Botti, & Hanko (2011) apply a metacognitive and process-oriented account of decision-making to explain some of the anomalies in the literature about time pressure and the effect of choice set size. Consistent with the approach adopted in the present model, Inbar et al.'s (2001) account "is based on how people evaluate their *experience of choosing*" (p. 533). Their results showed that it is the feeling of being

rushed in a decision — not the absolute choice set size — which heightens anticipatory regret, negative affect and leads to indecision behaviour. This aspect of time stress is often ignored as an experiential concomitant of decision-making, but can be a direct situational predictor of depletion-based process indecision.

Moreover, time pressure interacts with lay theories and implicit beliefs about the temporary component of decision-making. Ariely & Zakay (2001), for instance, showed that people often believe that "a quick choice is a bad choice", despite the inconsistency of this belief with other social norms about decisive action. Time, and expectations about how long a decision-making activity should take, thus becomes another criterion in the self-monitoring of the decision-making process. Inbar et al. (2001) showed that modifying such lay theories can eliminate the effect of choice size on regret, and the thus amount of regret itself. By extension, process indecision may also be moderated through the socially-construed temporal expectations of decision-making.

Indecisiveness. Process indecision, particularly the aversive form, is often the aspect of indecision which is addressed by items in indecisiveness scales. Consider items in the IS(-R) such as "I become anxious when making a decision", or "It seems that deciding on the most trivial things take me a long time". These do not address the outcome indecision of computation and maximisation, but rather the awareness of the aversive aspect of deciding and being a decision-maker.

If the IS-R items are read as present-tense and real-time experiences during the course of decision-making, they yield clues about how process indecision is likely to be experienced, or at least remembered (Kahneman & Riis, 2005). Yet indecisiveness must go beyond merely the frequency of process indecision, as has been discussed. Indecisiveness, as relevant to process indecision, must also reflect a person's schemas and expectations about decision-making and about the self as a decision-maker. Both avoidant and aversive forms of indecisiveness can therefore be readily applied as dispositional predictors of process indecision, but in different ways.

Aversive indecisiveness would increase the probability and intensity of negative affect during decision-making. The increased monitoring of self-directed negative consequences may also lead to a lower baseline level of self-regulatory capacity or an accelerated rate of depletion. Avoidant indecisiveness, on the other hand, would generate threat-based cognitions about the decision event as a whole. With decisions seen as bothersome external obstructions towards goals, this form of indecisiveness

would increase the salience of withdrawal behaviours. There would also be a tendency to distance the decision activity from the decision-maker and therefore the threat to the person's broader motivations.

Good Decision-Maker: Self-presentation Indecision

The second indecision process, process indecision, represented a turn away from the content of the decision and towards the felt difficulty and psychological demands of the act of deciding. The third form of indecision goes a step further. Self-presentation indecision is a response to the motivational drive to be a good decision-maker — not just to make a good decision — but in a way which ultimately impairs decision-making. Whereas process indecision is a dysfunctional attempt to regulate decision-making, self-presentation indecision is the result of the dysfunctional regulation of one's own indecisiveness.

How self-presentation indecision maladaptively affects the immediate decision-making activity is similar in mechanism to the limited attention and capacity pathways advanced for process decision. The effort involved in monitoring and adjusting for one's supposed indecisiveness can make indecision worse by diverting resources away from both good decision-making and good decisional outcomes (Vohs, Baumeister, & Ciarocco, 2005). Additionally, the weight given to self-presentation and impression-management motivations may itself be disproportionate or inappropriate within the decision-making activity.

Self-presentation indecision is grounded in the self-perception of incompetence as a decision-maker, rather than the optimisation or performance of the specific decision at hand. The identity of being an "indecisive person" is now the foreground. Instead of merely wanting to resolve and exit this decision by deciding well and attaining a good immediate outcome, there is a self-regulatory attempt to minimise or mitigate the expression of indecision and its negative meaning for the person. Self-presentation indecision therefore builds on immediate and past experiences of outcome and process indecision. It presumes that either or both forms of indecision are anticipated or are currently being experienced. These other indecision processes not only undermine the basis by which the person can claim that they are a competent, decisive and confident decision-maker, but also contributes to the limited psychological capacity for adaptive impression management (Vohs et al., 2005).

The question then is why this self-perception of indecisiveness can be such an undesirable state that it fuels a paradoxical attempt to regulate its appearance and expression. Individual differences are of course involved, but so are sociocultural norms about decision-making and decisiveness. As such, there is necessarily much more direct social and cultural variability in this form of indecision than the others. The position adopted here, reluctantly, is primarily applicable within a WEIRD cultural milieu.

Krumboltz (1992), for example, reflecting on the pressures placed on people from a young age to be decisive about their future careers, wondered whether "part of the reason that indecision is seen as a problem may be due to the word itself" (p. 240). The word "indecision" connotes a problematic categorical absence of something valuable. More than that, the word is embedded within social expectations of decisiveness and instrumental action within contemporary Western society. As Chapter 1 pointed out, indecision and indecisiveness have become pejorative terms reflecting a perceived failure to live up to standards of decisional competence in a society which demands choice-based action (Salecl, 2010).

Invoking the construct of the self takes the study of indecision into new territory. However, the interpersonal and self-concept motivations of the decision-maker fit comfortably within a social functionalist framework. After all, one of the most fundamental human motivations is to act in a way which preserves a sense of self-integrity and consistency (Baumeister, 1998). The challenges of being a decision-maker and the demands of multiple other competing motivations can disturb the integrity otherwise avoided by doing nothing or maintaining the status quo. Cognate processes identified in social, cognitive and clinical psychology can help shed light on this process.

Indecision and identity. Cantor's (1990) distinction between the "having" and "doing" aspects of personality is one helpful way to understand the identity-salient dimensions of indecision. Applying this to the related topic of procrastination, Stainton, Lay, & Flett (2000) observed that procrastination was not just something that people *did* (enacting the traits), but it was also a quality which people *had* (as an attribute of who they were). While most personality theories often emphasise the "having" of traits (e.g., conscientiousness) over the "doing", the reverse is true for indecision or indecisiveness, which is usually being described according to its "doing" behaviour without the "having". Indecisiveness, as has been discussed, tends to be identified by the frequency

of the "doing" without reference to the underlying causes and attentional biases. However, indecisiveness is also something which someone can *have*. Calling oneself indecisive, as Rassin (2007) identified, may have a significant but relatively unexplored role to play in understanding of decision difficulty.

Having the attribute of indecisiveness — being indecisive — does not remain only at the trait level. Stainton et al. (2000) found that just as there are individual differences in procrastination, there were also individual differences in the extent to which people were aware of their own procrastination and reflected on it. Moreover, people differed in the extent they to which they recognised procrastination as a part of their identity (i.e., "I am a procrastinator") rather than something which is purely situational in origin. While self-reflection on traits is itself a trait, the cognitions themselves — in this case, about one's own indecisiveness — are of greater importance in understanding the antecedents of self-presentation indecision.

Indecision as a source of shame. An awareness of one's own indecisiveness therefore signals not only a personal struggle with an immediate decision, but can also draw attention to the self as indecisive, decisionally inept, hesitant or unconfident. These are negative self-evaluations which are made against social norms about decisiveness, self-efficacy and the value of instrumental choice.

Applying self-discrepancy theory, this might be considered as an *actual-ideal* conflict, particularly in terms of the ideal self as seen from the standpoint of another person (Higgins, 1987). An unfavourable comparison is made between the desired and idealised identity of a decision-maker within the decision activity which gives rise to perceived incapacity and diminished self-esteem. This can be contrasted with the self-discrepancy in process indecision, where there is a gap between the decision-maker and the expectations of effective decision-making as evaluated by the negative experiences and outcomes attached to that particular decision. It is also distinct from the anticipated emotions which depend on affective forecasts of the decisional alternatives, as in outcome indecision.

The affective experience of self-presentation indecision is therefore not likely to be primarily driven by the agitation-related emotions as in the case of process indecision (e.g., fear and threat-based anxiety), but rather *self-conscious emotions* such as shame and embarrassment (Tangney & Tracy, 2011; Tracy & Robins, 2004). Self-conscious emotions involve reactions to a person's own characteristics or behaviour and differ from primary emotions on the basis of their self-reflective quality. Campos (2007)

suggests that *other-conscious emotions* is a better descriptor, as these emotions involve an appraisal of others, perceiving that someone else is expressing an emotion about me. In the case of self-presentation indecision, it is the appraisal that others perceive me to be defective and incompetent as a decision-maker, and that I am therefore powerless, inferior and less of a person in this domain.

Recent functionalist research on shame suggests that this self-conscious emotion can result in both approach and avoid behaviours. Shame is commonly thought to lead to withdrawal, hiding or escape as protective behaviours on account of feeling exposed and "small" (Tangney & Tracey, 2011). In the case of self-presentation indecision, behaviours such as decision avoidance, deferral and might be expected once shame is experienced, in a way which is consistent with other avoidance-related indecision behaviours. As an ego-dystonic phenomenon, this response seeks to eliminate or neutralise the perceived intrusion and withdraw from further social criticism and sanction. Hammer (2010) found some preliminary evidence that a prevention-based regulatory focus (characterised by a motivation to stop further losses: Higgins, 1996) may motivate decision-making behaviours which minimise the possible social costs of being seen and labelled as indecisive.

However, shame can also activate an approach-based motivation to restore the damaged self (De Hooge, Zeelenberg, & Breugelmans, 2010; 2011). While protective responses may be appropriate in some circumstances, it is also important to re-assert a positive evaluation of the self when this is possible. This may be expressed as increased engagement with otherwise avoided performative situations or intentionally taking prosocial steps to make amends for perceived transgressions or failings.

In the case of indecision, this discomfiting dissonance of decision-making identities may translate into a motivation to be, and to be seen as, decisive in socially appropriate ways. Such strategies, however, are not always successful. The motivation for self-restoration or protection motives is based on motivations which may not be incompatible with those of a good decision-maker. Appearing to be decisive is different from making good decisions, being a good decision-maker, or, indeed, actually being decisive. This may result in unintended decisional side-effects beyond indecision. For example, the pressure to be decisive may lead to unnecessary or impulsive decisions being made since. Such decisiveness appears to be socially rewarded, even if indecision in the form of keeping one's mind open (Krumboltz, 1992; Cohen & Ferrari, 2010) or changing one's mind (Gelatt, 1997; cf. Menand, 2001) may be more adaptive responses.

Indecisiveness cognitions. Self-presentation indecision also has a cognitive dimension. This relates to the thoughts and self-statements about one's own indecisiveness during the course of decision-making. Again, these cognitions need to be differentiated from metacognitive processes in process indecision, which relate to the monitoring and execution of a particular decision. Here, the cognitions take on a self-referential quality, emphasising the undesired identity of being an indecisive and ineffective decision-maker.

Stainton et al. (2000) built upon previous studies recognising that procrastinators often had automatic thoughts about their own procrastination. These self-referent thoughts were typically of a negative or self-critical character and resulted in distress or agitation (Lay, 1994), consistent with how negative automatic thoughts are understood in the cognitive therapy literature (Beck, 2011). Examples of these procrastinatory cognitions identified by Stainton et al. (2000) include self-statements like: "Why can't I do what I should be doing?", "I'm letting myself down", and "I'm such a procrastinator, I'll never reach my goals". Such cognitions emerge not just after procrastination has occurred (as regret cognitions), but also during and prior to task engagement (Fernie et al., 2009).

Stainton et al. (2000) suggest that the frequency or intensity of procrastinatory cognitions reflect the extent to which procrastination is embedded into a person's self-scehma. Activating this schema is a source of self-generated and self-perpetuating stress (Sirois & Pychyl, 2013). These conditions influence how actual and anticipated instances of procrastination are experienced, but can also be a source of aversive experience in themselves. Procrastination cognitions lead to attempts to regulate the thoughts, as well as the procrastination behaviour. Such attempts at cognitive control, however, are often maladaptive. Sirois & Pychyl (2013) noted that immediate attempts to regulate negative mood caused by negative procrastinatory thoughts can occur at the expense of goal attainment. In other words, noticing and responding to one's own procrastination can distract from the task at hand and lead to further procrastination. This is not unlike the choking under pressure phenomenon, but with antecedents in the meaning of the performative activity for the self, rather than just in the performance itself.

Much could be applied from procrastination to indecision, where very little attention has been paid to the automatic thoughts about the difficulty of making decisions and its implications for identity. By analogy, *indecision cognitions* would

include negative self-referent thoughts about one's general inability to decide as well as the struggle and stress which is experienced in the process of decision-making. Indecision cognitions may not necessarily correspond with reality: perceptions about one's own decision difficulty may well be distorted but subject to biased and confirmatory evidence-seeking. It is rather the meaning assigned to the negative thoughts about one's own decision-making ability, and their effect on any current or anticipated decisions which give rise to self-presentation indecision.

Judgmental self-doubt. While indecision cognitions are specific negative thoughts which "pop up" in the midst of decision-making and connect difficulties in specific decisions to the general self-relevant beliefs, the concept of *judgmental self-doubt* (JSD) operates at the level of deeper level of core beliefs and self-schema. Such self-doubts are not necessarily verbalised as discrete cognitions, but are deeply accepted and understood as part of the self.

JSD was introduced by Mirels, Greblo, & Dean (2002) to refer to a stable and generalised mistrust of one's own judgment. A person high in JSD doubts her or his own ability to make good decisions and accurate judgments in general. A decision is seen as just another opportunity to fail or fall short of some normative standard and therefore to confirm to others one's decisional incompetence. In response, JSD creates a vulnerability to persuasion and social conformity in decision-making, highlighting the interpersonal dimension of self-presentation indecision.

Mirels et al. (2002) also found that JSD was associated with lower self-esteem, increased trait anxiety and proneness to rejection. As such, it would be expected that JSD, as a core belief, would shape individual differences in both aversive and avoidant indecisiveness, which in turn influence self-presentation indecision behaviour.

JSD might also explain the defensive and coping component of self-presentation indecision. A dissonant and ego-dystonic state of a lack of decisional competence, at the level of core beliefs, could be transformed into a rigid and deterministic explanatory mechanism, such as in the self-statement "I'm always going to be a bad decision-maker". As such, indecision is no longer actively dystonic, but is passively tolerated or even exculpatory. In turn, this may encourage the relinquishment of decisional responsibility and the development of preferences for avoidant strategies such as buck-passing and delegation (Janis & Mann, 1977). While this may sometimes result in the "successful" evading of decisions, indecision may be more likely to occur in unavoidable or unforeseen decisions in the absence of a more adaptive decision-making

strategy. Self-presentation indecision, as a generalised doubt and pessimism about one's own decisional efficacy, can therefore legitimise and perpetuate further indecision through all three processes.

Self-monitoring of expressive behaviour. Self-presentation decision is not confined to the intrapersonal affective and cognitive experience of the social and normative dimensions of being a decision-maker. The non-verbal expression which occurs during decision-making is also a target for self-monitoring in accordance with perceived social norms. Snyder's (1974, 1987) theory of self-monitoring of expressive behaviours is directly applicable to decision-making as a performative and social activity. In this theory, the motivation for social approval and impression management requires a constant monitoring and regulation of self-expressive acts (Gangestad & Snyder, 2000). Depending on the relevant performative norms, certain behaviours of expressions of affect may be intensified, neutralised or masked.

Arkin (1981) went further to identify two kinds of self-presentational strategy: *acquisitive* and *protective*. With strong parallels to other approach/avoid processes already discussed, the former strategy relates to the pursuit of social approval, while the latter is the motivation to avoid social disapproval (Wolfe, Lennox, & Cutler, 1986). Applied to indecision, a protective strategy may translate to actions and expressions aimed at concealing an inappropriate emotional state during decision-making (e.g., fear or anxiety) which have negative implications for one's esteem. Protective strategies may also increase the vigilant attention and responsivity to others (Wilmot, DeYoung, Stillwell, & Kosinski, 2016) in ways which have been recognised as part of decisional conflict (Janis & Mann, 1977). Avoidance is also more likely in relation to diagnostic social situations where the stigmatised self as a decision-maker may be exposed (Beck & Clark, 2009).

An acquisitive strategy may be less common in indecision, but is not implausible. Pursuing approval may mean actively trying to look decisive in normative ways, or building up goodwill as a decision-maker whenever this is possible (i.e., demonstratively making easy decisions). Acquisitive self-presentation may also provide an opportunity for further exploration and engagement with a decision problem, representing a rarely recognised positive dimension of indecision (Cohen & Ferrari, 2010).

Stereotype threat. Finally, the social psychological research on stereotype threat may also yield further insights about how identity-relevant processes in

indecision may lead to paradoxical attempts to regulate it. Schmader & Beilock (2012) define stereotype threat as:

> a concern that one might inadvertently confirm an unwanted belief about one's group. As a result, those who experience stereotype threat have a motivation to avoid enacting any behaviour that might be seen as stereotypical (p. 35).

This motivation to preventing stereotype confirmation can "hijack" the attentional, executive, cognitive or affective resources required for optimal task performance, along the same lines as other self-regulatory failures (e.g., choking under pressure) described above. In some cases, this takes capacity away from managing the immediate decision, impairing performance and thus confirming the very stereotype which is actively being disavowed (Inzlicht & Schmader, 2012).

The stereotype threat research has focused primarily on visible forms of group identity, such as gender or race. This level of stereotype threat may be relevant to indecision where decisiveness is attached to other social stereotypes, particularly cultural identity or social status markers. A decision-making situation may activate these other stereotypes and invoke a protective response, which actually impairs the decision-making process and outcome. However, stereotype threat could also be considered in relation to the social and interpersonal aspects of decision-making itself. Given that a psychological group can be established fluidly (Turner, Oakes, Haslam, & McGarty, 1994; Tajfel, Billig, Bundy, & Flament, 1971), a socially-exposed decision-making situation could readily create a salient social identity distinction between *decisives* (as the more powerful outgroup) and *indecisives* (as the minority ingroup). Decision-making in this case is not primarily motivated by a desire to decide well, but the desire to avoid confirming one's identity or stereotype as an indecisive person. Attempting to shed the identity of being indecisive by appearing decisive would be particularly effortful and counterproductive.

Murphy & Taylor's (2012) exploration of the conditions under which stereotype threat arises generally helps identify the boundary conditions for decision-based stereotype threat. They suggest that stereotype threat occurs when there are situational cues which signal the value or importance of a particular identity (i.e.., decisiveness). This identity then becomes more salient, and a vigilance process is initiated to determine whether one's own identity (i.e., as an indecisive person) may be a possible liability (e.g., if indecisiveness results in outcome or process indecision which is

expressed in the presence of outgroup members). If, and only if, the context confirms that this identity may be a source of stigma, devaluation or criticism, then vigilance increases and resources are diverted away from task performance to maintaining or portraying a preferred or idealised identity (i.e., of being decisive) (Steele, Spencer, & Aronson, 2002).

The result of decisional stereotype threat may look like other stereotyped forms of indecision, especially decision latency, deferral or decision avoidance. However, such indecision originates in the person's social identity and social comparisons and is experienced as concerns about others' perceptions, one's competence and the validity of the stereotype itself (Steele, Spencer, & Aronson, 2002). This makes it quite distinct from indecision in other categories, which address the experience and demands of deciding or the content of the decision.

Here, some of the culturally-conditioned folk theories about indecision and decisiveness may also have some unexpected but significant influences on self-presentation indecision. Consider the suggestion made earlier that indecision (as the failure of evaluation) could be regarded as the antithesis of rational decision-making. This position has normative strength within a WEIRD sociocultural context, which privileges decisive action to maximise immediate outcomes. If such a view is held, especially by someone who is indecisive, then a response strategy to stereotype threat or self-discrepancy may be to overemphasise rational and consequentialist processes when deciding.

That is, the belief that one can and should use optimising and utility-maximising strategies when deciding may be particularly for people high in indecisiveness. Such expectations may, however, come at the expense of attending to valuable non-consequentialist cues, relying on intuition or heuristics, or using imagination and creativity to solve the problem (Gigerenzer, 2010; Cohen & Ferrari, 2010; Damasio, Everitt, & Bishop, 1996). Trying to make the form of decision-making look proper and sound to forestall a charge of indecision and "irrationality" may in fact be the worst way to approach the decision, possibly creating more indecision and thwarting the person's goals.

Indecision Behaviours and Experiences

A few concluding words are needed about the consequences of indecision within the decision activity. As it should be clear from the preceding discussion, there is no

one distinctive expression of indecision. Instead, within this functionalist approach, indecision presents in a number of forms depending on the motivations of the decision-maker. Broadly speaking, both approach and avoidant behaviours can follow from the difficulties of acting on these motivations. The overt behavioural indicators of indecision therefore should not be conflated with the processes which led to them. Indecision may therefore be said to exhibit both equifinality and multifinality. The same kind of endpoint or behaviour might be reached via different antecedents, and the same antecedents might result in different endpoints or behaviours, respectively.

The psychological processes are not easily inferred from behaviour. For example, is prolonged decision time caused by increased effort and engagement with the decision content (an approach response), or does it indicate a detachment and abjuration of the decision and the decision-role (an avoidant response)? Moreover, otherwise "surprising relationships", such as that between indecision and impulsivity (Barkley-Levenson & Fox, 2016), can now be explained by looking at the functions of the decision-maker and not just how the decision activity terminates.

This is, admittedly, an ambitious attempt to synthesise otherwise disparate ideas beyond the JDM literature and across multiple fields of psychology. The next part of the thesis begins to test and refine this proposed model. This can only be done piece by piece, beginning with an empirical inquiry about the functionalist bases and multidimensional nature of indecision and indecisiveness.

CHAPTER 4:
STUDY 1 — INDECISIVENESS AND EXPERIENCES OF INDECISION

There is a sizeable gap between the functionalist model of indecision and indecisiveness introduced in Chapter 3 and the available empirical research. This study has three objectives in relation to examining the model. The first is to challenge the atheoretically unidimensional conceptualisation of indecisiveness. The study therefore examines the multidimensionality of indecisiveness using a composite dispositional measure. In line with the proposed model, indecisiveness is hypothesised to have at least an aversive and avoidant dimension.

Secondly, the psychometric identification of the different components of indecisiveness needs to be supported by evidence of convergence with and difference from other traits. The study looks at a wider set of dispositional qualities than typically considered in the decision-making or indecisiveness literature. These include measures of dialectical thinking, time perspective, motivations towards rewards and goals, and away from punishment and invalidation. Current symptoms of psychopathology are also measured.

Thirdly, Study 1 examines how indecisiveness relates to a recalled recent experience of indecision. Emphasis is given to the affective, cognitive and interpersonal dimensions of indecision and its antecedents, rather than the instrumental utility of the decision outcome or its absence. Previous studies have not examined the experiential and motivational difficulties of being a decision-maker in much detail. This inquiry will therefore inform the understanding of process indecision and self-presentation indecision in particular, while also showing how these forms of indecision interact with outcome indecision. The use of self-report and recall does have its limitations, but later studies will return to behavioural measures from experimentally induced indecision.

Despite the number of variables and constructs included, this first study is an attempt to be as uncomplicated as possible in terms of procedure and measurement. It attempts to bridge the gap using an incremental research approach which builds on existing measures and findings as far as possible, rather than trying to engage in re-description or unnecessarily creating new measures or concepts. Moreover, by recognising the multiple functional motivations of the decision-maker and moving beyond the constraints imposed by instrumental consequentialism, this study aims to go some way to resolve the “stuckness” in the literature which limits the development of a workable psychological theory of indecision and indecisiveness.

Indecisiveness and its Multidimensionality

Aversive and Avoidant Indecisiveness

As Chapters 2 and 3 made clear, there are compelling theoretical and empirical reasons to consider that indecisiveness is a multidimensional construct, even when measured using published instruments which claim to be unidimensional. The kind of multidimensionality anticipated by this study is different from that set out by of Germeijs & De Boeck (2003) and Rassin (2007). The three dimensions of indecisiveness which were identified there — a lack of information, valuation problems, outcome uncertainty — were constrained by an outcome-oriented and functionally singular way of understanding the concept.

Spunt et al.'s (2009) identification of aversive and avoidant forms of indecisiveness is more consistent with the model. Informed by evidence of differences in BIS and BAS sensitivity, this distinction not only recognises that indecisiveness has different motivational bases but is also in line with an active role of indecisiveness in modulating attention and sensitivity to decision events. However, the empirical and psychometric basis of this distinction in indecisiveness was not without its limitations, as discussed in Chapter 2. Spunt et al. (2009) also did not test their two-factor model using behavioural or self-report measures of decision-making and experienced indecision.

Moreover, their use of the IS-R as their only measure of indecisiveness meant that the factors were confounded by the presence of items about regret but the absence of items about aversive experience (cf. Germeijs & Verschuren, 2002). Despite the wide range of indecision characteristics in the IS-R, there is no attempt to structure these characteristics into a coherent framework. What is missing, in particular, are items which address aspects of process and self-presentation indecision in addition to, and distinct from, outcome indecision. It is not just the IS-R which has this deficit, and as such, remedial work is needed.

Indecision and Personal Fear of Invalidity

One way to supplement standard measures of indecisiveness is to co-opt scales developed outside the literature on decisional difficulty (whether in the JDM, career indecision or clinical strands) which address decision-making from a wider and less outcome-bound perspective.

One relevant construct is the *personal fear of invalidity* (PFI), identified by Thompson, Maccarato, Parker, & Moskowitz (2001) as part of a long-running project on epistemological orientations towards uncertainty. PFI refers to a dispositional tendency to be concerned about the personal cost of committing errors or making incorrect judgments. While this has a very wide range of application, PFI tends to be operationalised within the decision-making context. Decisions are the primary means by which people can bring about closure, which is a fundamental concept in this epistemological model. Attaining closure has the psychological purpose of not only creating structure and stability in terms of outcomes, but also providing feedback in terms of a subjective sense of validity or invalidity in relation to the social world.

Although Thompson et al. (2001) acknowledge that PFI may also be described as a *personal need for validity*, the fear of invalidity goes further than a need for validity. PFI entails an avoidance of *any* invalidation out of a fear that a discordant finding would challenge the person's epistemological reality beyond tolerable limits. As such, persons high in PFI show a heightened awareness of the adverse consequences or perceived risks of a decision or activity. However, these consequences are different from the instrumental outcomes of a decision. They refer here to the consequences for how the decision-maker makes sense of themselves (including as a decision-maker) and the world.

Behaviourally, PFI is manifested through behavioural and cognitive hesitancy, and a resistance to commitment. Thompson et al. (2001) suggest that people who are high in PFI seek more alternatives when making decisions and demonstrate agitation and negative affect around the decision-making process. Decisional procrastination also follows due to the feared negative personal outcomes of making a choice. There is also a tendency to vacillate between options and hold more ambivalent attitudes and preferences, motivated by a counterintuitive desire *not* to be accurate (Clarkson, Valente, Leone, & Tormala, 2013). This is because vagueness from intentional inaccuracy insulates against invalidation, and so does indecision. PFI and its expression is therefore aligned with process and self-presentation indecision at the state level by way of both arousal and avoidant processes. The salience of personal consequences makes the process of decision-making difficult and aversive, while the act of decision-making is also seen as a difficult test of the self as a decision-maker.

On the positive side, Thompson et al. (2001) suggest that PFI is also related to a flexibility of thought. The combination of ambivalence and concern about errors means that high-PFI individuals may be more data-driven and therefore less likely to employ

stereotypes or jump to conclusions in reasoning. The problem with this flexibility, however, is that there is often too much data about the self, the decision-problem and the world to consider and verify.

Thompson et al. (2001) developed and validated a 14-item Personal Fear of Invalidity Scale (PFIS) to measure this construct. Sample items from the PFIS are shown in Table 4.1. All items in the scale directly relate to the difficulty of decision-making or being a decision-maker. When compared against the IS(-R), the items in the PFIS place more weight on the psychological activity of decision-making. There is considerable emphasis on the struggle, demands and aversion caused by decision-making as a situational and performative task. The language used is consistent with other descriptions of indecision as a negative affective state (e.g., Elaydi, 2006). The PFIS also recognises that indecision can emerge in the process of thinking about or becoming aware of their role as a decision-maker and its attendant demands and difficulties. In doing so, it espouses a model of decision-making which has metacognitive, social and performative dimensions.

Table 4.1

Sample Items from the PFIS (Thompson et al., 2001)

3.	Sometimes I become impatient over my indecisiveness.
4.	Sometimes I see so many options to a situation that it is really confusing.
5.	I can be reluctant to commit myself to something because of the possibility that I might be wrong.
9.	I prefer situations where I do not have to decide immediately.
12.	I wish I did not worry so much about making errors.

In Thompson et al.'s (2001) validation study with 157 participants, the PFIS had a one-factor structure in an exploratory factor analysis. A satisfactory Cronbach's alpha of .82 was observed. The PFIS correlated significantly with the Beck Depression Inventory ($r = .47$, $p < .001$), self-consciousness ($r = .34$, $p < .001$) and a social anxiety measure ($r = .56$, $p < .001$). Consistent with its stated aims, the PFIS was also found to be strongly correlated with judgmental self-doubt ($r = .81$, $p < .001$; Mirels et al., 2002). These associations suggest that the PFIS addresses negative self-relevant aspects of decision-making which may then predict both process and self-presentation indecision.

There is therefore a good psychometric and theoretical basis to regard the PFIS as a measure of indecisiveness — or at least one part of such a measure. The PFIS by itself, however, is considered inadequate as a comprehensive measure of indecisiveness within the current model. The PFIS pays more attention to the affective and personal experiences during decision-making, unlike the IS-R and other scales. However, also unlike these scales, the PFIS does not sufficiently address the difficulty of deliberation and moving from internal decision to outcome. As such, it is less able to address the more instrumentalist and computational aspects of decision-making which may give rise to subsequent outcome indecision or process indecision. Nothing more could be expected, given that the PFIS was not designed as an indecisiveness measure, even if it seems to behave like one.

The inclusion of the PFIS in the present study is therefore to test this question of whether it has validity as a measure of indecisiveness, compared against the IS-R. If preliminary evidence of validity can be established, then the next question is whether the PFIS can be used in conjunction with the IS-R. This composite measure would provide a larger pool of items reflecting a broader phenomenological and functional characterisation of decision difficulty. This would then provide a stronger basis for identifying and demarcating the different dimensions of indecisiveness.

Dialectical Thinking, Time Perspective and Psychopathology

This study also provided an opportunity to examine whether the hypothesised approach/arousal and avoidant dimensions of indecisiveness are differentially associated with other constructs beyond BIS/BAS which have been previously studied in the research on indecisiveness.

Dialectical thinking. One trait of particular interest is dialectical thinking. Also known as naïve dialecticism, dialectical thinking is characterised by a tolerance for contradictions which stands in contrast with an analytical, categorical and rule-based mode of cognition which is the default in Western societies (Peng & Nisbett, 1999; Nisbett, Peng, Choi, & Norenzayan, 2001). This implicit epistemology results in a corresponding disinclination to identify a single "correct" answer to a given problem. Associated with this is a recognition of constant change (i.e., that the universe is constantly in flux, that reality is a process) and the principle of holism (i.e., that nothing is isolated, but everything is connected; to know something requires knowing all of its relations).

While dialectical thinking has so far primarily been applied in cross-cultural psychology (cf. Ho, 2000), its application in social cognition and decision-making more generally has been recognised (Hui et al., 2009). More recently, the relationship between dialectical thinking and indecisiveness has been studied directly (Li et al., 2014; Ng & Hynie, 2014, 2016). The findings suggest there is a strong relationship between indecisiveness and dialectical thought, such that naïve dialecticism mediates the role of culture on indecisiveness. However, these findings are limited by the unidimensional approach to indecisiveness, leaving room for further investigation here. The malleable and diffuse sense of self associated with dialectical thinking may produce a tendency to withdraw from decision-making, which is seen as a forceful imposition of categories and closure in an ambiguous world. To that extent, dialectical thinking may be associated with avoidant indecisiveness more than aversive (arousal-oriented) indecisiveness.

Time perspective. The diachronic nature of decision-making — that the activity of deciding draws on past experiences, occurs in the present and has consequences for the future — has meant that the concept of time perspective has also received some attention in relation to indecisiveness. Time perspective relates a person's stable attitudes, beliefs and values related to different aspects of time (Zimbardo & Boyd, 2008). Zimbardo & Boyd (1999) identified five main types of time perspective, commonly measured using the Zimbardo Time Perspective Inventory (ZTPI). These are *Past Negative* (adverse attitudes about the past), *Past Positive* (positive construction of the past), *Present Hedonic* (enjoyment and pleasure in the present), *Present Fatalistic* (hopeless, nihilistic orientation) and *Future* (planning and achievement of future goals).

Díaz-Morales et al. (2008) found that positive and negative past perspectives and low future time perspectives were predictive of decisional procrastination and avoidance. In relation to career indecision, Taber (2013) observed different combinations of time perspectives which were associated with indecision and impaired decision-making. A past negative time perspective was a particularly strong predictor. Taber (2013) surmised that this may be due to an aversive reconstruction of the past, which may be combined with a sense of powerlessness in the future (present fatalistic). On the other hand, a future time perspective was associated with reduced decision difficulty and impairment. However, more work is needed to identify how time perspective relates to the multiple motivations of the decision-maker and their appraisal of decisions.

Psychopathology. The association between indecisiveness and psychological disorders has long been identified, but has not been researched extensively, as Chapter 8 will discuss. While indecisiveness has been recognised as a symptom of both obsessive-compulsive related disorders and depression, the clinical literature does not yet satisfactorily explain the mechanisms of this relationship. Affective, information processing and self-construal processes are all implicated. As such, to examine whether current psychopathological symptoms might have different relationships to different facets of indecisiveness, a well-validated but brief measure of depression, anxiety and stress symptoms is included in the study.

Indecision Narratives and Recollections

Quite separate to psychometric measure of indecisiveness and behavioural measures of decision difficulty are the memories and stories people have of their own experiences of indecision. In the studies of decision difficulty reviewed in Chapter 2, none had elicited participants' verbalised or structured accounts of their experience of indecision, whether induced by an experimental situation or recalled from previous real-life events. Such accounts would have been considered largely unnecessary where decision-making is seen as an instrumental and instantaneous transition to a desired end state. In such a view, a person's own experience of making the decision is much less important than what decision outcome was attained or whether one was reached at all (cf. Beach, 2010). Even Shafir et al.'s (1993) finding that the ease of explanation and justification during decision-making can insulate against indecision is different from an empirical curiosity about the content and form of the narratives about decision-making and indecision.

A more phenomenological inquiry about decision difficulty can be found outside the JDM literature in some earlier clinical case studies and reports. However, in these accounts, the patient's narrative itself is heavily filtered through the therapist's therapeutic and theoretical lenses. Accordingly, in some cases the description of the experience of indecision can go well beyond the available facts into speculative realms of analysis (e.g., Bergler, 1940).

The absence of indecision narratives is a problematic omission within the context of a functional and psychological model. How people describe, remember and make sense of their own decision-making and decision difficulty is of critical importance in understanding their goals as a decision-maker. A middle methodological ground can be found, recognising the importance of soliciting subjective accounts of

indecision while attempting to minimise apophenia on the part of the researcher and selective reconstruction on the part of the participant. As such, another part of this study is to solicit brief accounts of a recent experience of indecision through a written response to an open-ended survey question. Due to practical constraints of the current project, however, there was no opportunity to conduct a qualitative analysis of the responses themselves. Rather, the primary source of data here are structured questions about experience of indecision and its recollection, using the writing task as a prompt for recall. An analysis of indecision using the framework of narrative psychology was initially considered (Beach, 2010; Bruner, 1986; László, 2008), but will have to deferred to a separate project.

Pilot Study

Given the number of novel components to be tested, a pilot study was first run. The first aim of the pilot study was to explore the relationship between the PFIS and the IS-R. It was hypothesised that the scales would be correlated, but because of their differences in content and theory, not to an extent that are collinear. The second aim was to test a viability of a simple survey-based method to obtain brief narratives and structured responses in relation to a recent experience of indecision. Whether participants would be able to recall and describe an instance of indecision needed to be tested. The responses would also provide some initial qualitative data in relation to whether the different kinds of indecision proposed in the functionalist model could be discerned from participants' experiences. This pilot study was reviewed and approved by the Australian National University Human Research Ethics Committee (ANU HREC), as detailed in Appendix 4.1.

Method

Participants. 36 participants took part in the pilot study, which was run as an online survey. The participants were mostly first-year psychology students at the Australian National University participating for course credit. The age range of participants was 18 to 62 years with a median age of 22.5. The pilot sample was comprised of 17 female participants (47.2%) and 19 male participants (52.8%). English was the reported native language for 69.4% of participants.

Design and procedure. The study was presented as a survey about difficulty in decision-making. The survey contained dispositional indecisiveness scales and both

quantitative and qualitative questions about a recent experience of indecision. The two indecisiveness scales were the IS-R (Rassin et al., 2007) and the PFIS (Thompson et al., 2001).

Participants were asked to "think of a time in the past week when you had significant difficulty making a decision". Participants were asked not to think too deeply about the "best" example, and to focus on the most salient recent instance of indecision regardless of the subject matter or perceived seriousness. Once participants had identified such an event, they were asked to write about the nature of the decision in an open-ended text box.

Based on Beach's (2010) narrative-informed taxonomy of decision levels, participants were then asked to categorise whether the decision related to "a routine, intuitive decision with a small number of choices for something that was in the very near future" (Level 1), "a day-to-day decision for something in the short to medium term future, with a moderate number of choices and some complexity" (Level 2) or "a decision for something in the longer term future which would mark a major turning point in your life" (Level 3).

Participants were then asked to write about their decision-making process, and, importantly, their experience of indecision in similar text boxes. Finally, participants rated their satisfaction and difficulty with the decision-making and process, respectively, on a visual analogue scale (VAS), anchored at "extremely *[dissatisfied | easy]*" and "extremely *[satisfied | difficult]*". These items were scored as continuous decimal variables between 0 and 1.

Results

IS-R and PFIS. The mean on the IS-R was 31.750 (SD = 8.827) with a range 11 to 46 out of a possible range 11 to 55. Cronbach's alpha was .903 and skewness (-.545) and kurtosis (-.283) did not substantially depart from normality. On the PFIS, the mean was 43.389 (SD = 9.210). The range was 15–62 out of a possible range of 15–70. An alpha of .837 was observed, also showing adequate internal consistency. There was a strong correlation between PFIS and IS-R ($r = .783$, $p < .001$).

Decision levels, decision-making difficulty and outcome satisfaction. In their descriptions of a recent instance of indecision, eight participants (22.2%) classified their indecision event as a Level 1 decision (immediate, routine, intuitive resolution) in Beach's (2010) taxonomy. Nineteen participants (52.8%) categorised their decision at Level 2 (moderately complex, day-to-day decision) decision, and nine participants

(25.0%) described a Level 3 decision (a complex, major life turning point). Overall decision outcome satisfaction was relatively high (M = .728, SD = .234) and the mean level of difficulty in decision-making was above the scale midpoint (M = .572, SD = .257).

Decision-making difficulty differed according to decision level ($F(1, 2) = 7.080$, p = .003, η_p^2 = .300). Post-hoc analyses showed that Level 3 decisions were felt to be significantly more difficult than both Level 2 decisions (mean difference = .260, SE = .090, p = .019, Bonferroni correction applied) and Level 1 decisions (mean difference = .389, SE = .108, p = .003), but there was no significant difference between Level 1 and Level 2 decisions (mean difference = .128, SE = .093, p = .539). However, outcome satisfaction did not differ according to the decision level ($F(1, 2) = .557$, p = .578, η_p^2 = .033, *ns*). Outcome satisfaction and decision-making difficulty were negatively correlated, but not significantly so (r = -.322, p = .055). The PFIS, but not the IS-R, was negatively correlated with decision satisfaction (PFIS: r = -.330, p = .050; IS-R: r = -.256, p = .132, *ns*). On the other hand, the IS-R, but not the PFIS, predicted the difficulty of decision-making (IS-R: r = .343, p = .041; PFIS: r = .321, p = .056, *ns*).

Indecision narratives: Content analysis. Participants' responses to the open-ended questions were thematically coded to see whether participants' narratives supported the three kinds of indecision (outcome, process, and self-presentation) as specified in the functionalist model. Supporting the theoretical model, the narrative data demonstrated that participants often described indecision as the difficulty of wrestling with the benefits and costs of each decisional alternative (outcome indecision). For instance, the decision-making strategy of one participant (ID: 17; $z_{\text{IS-R}}$ = 1.05; z_{PFIS} = 1.37) was:

> … weighing up the pros and cons of each course, thinking about both the long and short term impact that this decision would have.

Given that the consequence of this particular decision (rated as Level 3) was personally very significant and complex, this made the computational process difficult to the point where the aspiration towards exhaustive optimisation to find the "correct" answer made the decision "very difficult":

> The decision I made would influence the rest of my life so I wanted to make sure it was the correct one, and I had thought about every possible option.

Another participant, despite being low in trait indecisiveness (ID: 20, $z_{IS\text{-}R}$ = -1.10; z_{PFIS} = -.69) also experienced outcome indecision, suggesting that this type of indecision might not be necessarily predicted by an omnibus indecisiveness score. The participant's strategy involved:

> Firstly looking at the possible outcomes of taking any decision. This was done through evaluating the positive aspects as well as the negative impacts.

However, the participant then described how following this strategy gave rise to decisional procrastination. No aversive experience of indecision was described by the participant, possibly suggesting that the delay may have been used to replenish exhausted decision-making resources rather than to avoid the discomfort of feeling "stuck" (Baumeister, 2002; Tyler & Burns, 2008):

> When weighing up the two options, opting to distract myself in doing something else such as watching TV or going on the internet.

However, aversive experience, part of process indecision, was a common experience for many other participants, with one person describing it as a "horrible place". However, aversion and negative affect cannot be predicted just from an undifferentiated trait measure or from the content of the decision. Even participants low in general indecisiveness and facing a simple decision experienced the paralysis and frustration of indecision:

> I didn't like being stuck in the decision. I felt annoyed at myself that I couldn't make such a simple decision. I kept trying to tell myself "come on already!!!!" (ID: 28; $z_{IS\text{-}R}$ = -1.13; z_{PFIS} = -.54, Level 1).

> I felt overwhelmed and disempowered, confused and afraid. I felt insecure and paralysed. I was stuck in wishful thinking that things would be there to support me first before I could jump, but the parachute could only be open after I took the leap. I needed a push, for someone to chute *(sic)* down in front of me, for someone to jump with me and hold my hand, or just muster my determination and faith (ID: 26; $z_{IS\text{-}R}$ = .48; z_{PFIS} = -.15, Level 2).

In addition to negative affect, other participants recognised that the difficulty of decision-making was found not in the content of the choice but in actively acting on the choice. Choosing to be a decision-maker and assuming the responsibility of performing

the act of deciding, rather than succumbing to indecision by inertia, was the difficult part of deciding. One participant described it in these terms (ID: 2; $z_{IS\text{-}R}$ = .60; z_{PFIS} = .61):

> [The decision] was only difficult in that I had to push myself to actually take action and make the decision; once [I] decided that I needed to do something, the decision itself was easy.

Another participant reflected on the role of decision-making process and self-awareness of indecision under time stress (process indecision), exacerbated by perceived failures when compared against unattainable expectations of ideal decision-making (self-presentation indecision):

> I feel frustrated that I left the decision for so long, as the time pressure that was placed on me added to the frustration I had. This time pressure and the pressure I had on myself made the decision difficult as I wanted the decision to be quick and perfect, however instead it took ages and I was never completely satisfied with it.

Other instances of self-presentation indecision were directed to the participant's own decision capacity and competence (i.e., judgmental self-doubt). Descriptions included thoughts about decision-making as an activity which occurred during a struggle over a relatively straightforward (Level 2) decision:

> I felt [a] bit uncertain, uncertain about how can we do "big things" in our life if we are stuck in the simplest thing like doing some exercises at home?

Lest it appear that the responses were clear in their delineation between the types of indecision, it was not uncommon for all three indecisions to overlap within the one account. One response, for instance, pointed to a dynamic interaction between the rational outcome of the decision (outcome indecision) in a Buridan's Ass-like situation, and the present experience of decisional difficulty and demand (process indecision), and an awareness of confirmation bias in the decision process which was inconsistent with personal and normative standards of decision-making (self-presentation indecision):

> The decision-making process felt difficult because there really didn't seem to be a clear answer. The pros and cons seemed pretty well balanced in general, and the more I focused on the particular elements of my decision, the more biased I

> seemed to get. For example, thinking about a particular con made it seem really bad, but then concentrating on a particular pro made it seem really good. That didn't help at all. … Being "stuck" in the decision was like having a new weight put on your shoulders. It felt like [going from] being carefree to having a heavy thought in your mind that you had to carry with you everywhere you went (ID: 27; $z_{IS\text{-}R} = 1.16$; $z_{PFIS} = 1.59$).

Discussion

The limitations of this pilot study include, of course, the small sample size and the restricted range of measures. Nonetheless, the results supported the hypothesis that the PFIS and IS-R would be correlated but not collinear. There is no apparent obstacle to taking the next step of using the PFIS and IS-R together to form a composite measure of indecisiveness, from which different factors may be more clearly identified.

Participants' accounts showed preliminary (if admittedly confirmatory) support for the three indecision processes. Moreover, the narratives of resolving indecision showed the relationships between these processes. These data add credence to the notion that these are not three exclusive endpoints of indecision, but are related processes within the activity of decision-making which vary with salient motivations and functional goals.

While being mindful of not inferring too much from single data points, the content of these reflections on indecision could also not be reliably predicted from the IS-R or PFIS as unidimensional measures of general indecisiveness. Not only is this in keeping with the distinction between trait and state forms of decision difficulty, it also shows that a one-factor approach to indecisiveness may have little predictive value in terms of behaviour. In terms of method, the pilot study showed that indecision narratives could be elicited through a simple and unconstrained writing task as part of an online survey. Participants were willing to share their stories of difficult decision-making with a good level of detail, insight and openness.

Hypotheses

Moving into the main study and focus of this chapter, five hypotheses can be formulated with the assistance of the results of the pilot study:

1. Two forms of indecisiveness, *aversive indecisiveness* and *avoidant indecisiveness* can be identified from the composite IS-R and PFIS and representing a disposition towards arousal/approach and avoidant/withdrawal attitude and behaviours to decision-making. Both aversive and avoidant decisiveness operate concurrently as parallel predictors of overall indecisiveness.

2. Aversive indecisiveness is correlated with higher BIS sensitivity, past negative time perspective, higher current psychopathological symptoms in relation to depression, anxiety and stress;

3. Aversive indecisiveness is correlated with greater autobiographical memory vivacity and recalled negative affect in the recalled event, a greater perception of an internal locus of causality but a lower sense of personal control of the indecision, and greater recalled engagement behaviours during the indecision event;

4. Avoidant indecisiveness is correlated with lower overall BAS sensitivity and lower future time perspective, but higher levels of dialectical thinking; and

5. Avoidant indecisiveness is correlated with lower emotional reactivity and reduced vivacity and encoding depth of the autobiographical memory, as well as greater recalled withdrawal-oriented indecision behaviours and avoidant cognitions.

Method

Participants

Three hundred and fifty participants participated in the online survey. Participants were first-year psychology students at the Australian National University, members of the university community who responded to on-campus and online posters and flyers, and a secondary snowball sample of participants recruited through these initial participants.

The study was described in the recruitment material as a survey about experiences of difficulty making decisions. The recruitment material also mentioned

that participants would be asked to write about a recent experience of decision difficulty. Participants were paid A$5 for completing the survey. First-year psychology students could opt to receive course credit instead. The study was reviewed and approved by the ANU Human Research Ethics Committee under a variation to the protocol for the pilot study (see Appendix 4.1).

Steps were taken to ensure the quality of the data and to filter out non-genuine or uninformed attempts at participation. This included the inclusion of two check questions embedded at two different points in the block of personality measures (e.g., "For data quality purposes, please *only* select the response 'Strongly Agree' for this item"). Participants who responded incorrectly to at least one of these questions were excluded if the variance of their responses to all the Likert-scaled personality questions was substantially above (indicative of random responding) or below (indicative of uniform responding) the mean of all participants. Participants who completed the survey in less than 10 minutes, approximately one standard deviation lower than the mean completion time (M = 38.73 minutes, median = 32 minutes, SD = 25.79 minutes) were also automatically excluded on the presumption that no reasonable effort had been placed into understanding and completing the survey. Participants who took more than two hours completing the online survey (indicative of being distracted and multitasking) were also excluded. Based on these filters, 25 participants were excluded, leaving a working sample of n = 325. This was more than the target sample size of 300, which was determined so as to exceed the minimum sample size required for exploratory factor analyses (see Results section below) and also to take into account the expected variance in recalled indecision experiences.

Of these participants, the median age was 21 with a range of 17 to 65. Approximately two-thirds (66.9%, n = 220) were female, while there were 106 male participants (32.2%) and 3 participants (0.9%) not identifying as either male or female. Students at the Australian National University accounted for 80.9% of participants.

Approximately one quarter (24.6%) of participants identified themselves as having more than one cultural or ethnic identity. A categorical ethnicity variable was created by coding the free-text response on this question according to the "broad groups" classification in the Australian Standard Classification of Cultural and Ethnic Groups (Australian Bureau of Statistics, 2016), with some minor changes.[10] A majority

[10] The broad groups were adjusted to divide "Oceanian" into Australian, New Zealander and "Other Oceanian", and to divide "People of the Americas" into North American, Central American and South American.

of participants (64.9%) identified themselves culturally or ethnically as being Australian or New Zealander, with 48.3% of all participants identifying as exclusively Australian or New Zealander. For the remainder, 23.7% of participants (10.2% exclusively) identified as North-East Asian (e.g., Chinese or Korean) and 11.7% (2.5% exclusively) identified as South-East Asian (e.g., Malaysian or Vietnamese). Less common cultural identity categories included North-West European (7.4%, 4.0% exclusively), Southern and Central Asian (7.1%, 2.5% exclusively) and North American (5.8%, 4.0% exclusively). No identification with any cultural or ethic group was reported by 1.5% of participants.

Design and Procedure

This study was an online correlational survey delivered using a web-based survey platform (*thematic.org*) designed and developed by the author. This customised platform was created because an affordable, flexible, secure and analysis-friendly survey system as not available at the time when this study was run. This online platform also allowed response types and data capture/storage methods to be created and changed beyond the scope permitted by other third-party systems. Screenshots from the survey are shown in Appendix 4.2.

The study was divided into two approximate halves: (i) the recall and description of a recent experience of indecision, and (ii) a battery of personality questionnaires. The order of these components was counterbalanced between participants in the survey. Unfortunately, the variable intended to capture the order of components was not recorded properly. As such, analyses into the effect of task order could not be conducted.

Participants were invited to have a short, self-paced break between the two parts of the survey if they needed it. At the end of the survey, participants were informed that follow-up projects would be conducted and were invited to generate a unique participant code based on easily recalled fragments of personal information for this purpose. Participants could also provide their e-mail address to be notified about follow-up research opportunities. These e-mail addresses were stored separately in order to keep participants' data de-identified.

Indecision Experience

In this part of the survey, participants were asked to recall a recent instance of indecision, which was defined as an experience of having difficulty making a decision. Participants were reminded that it was the intensity of their personal experience of decision difficulty which mattered for the purposes of this study, not the instrumental outcomes or significance of the decision. Participants were informed that indecision could sometimes occur in decisions with trivial consequences, or in unexpected or mundane contexts. They were asked not to self-censor any vivid experiences which came to mind, no matter how seemingly trivial.

Participants were told to take as much time as necessary to bring the most vivid or intense recent event of indecision into mind as clearly as possible and to only proceed to the next part of the survey once they had a specific, discrete event in mind.

Recall difficulty and decision importance. Immediately after bringing to mind a recent instance of indecision, but before writing about it, participants rated the difficulty of recalling this event. This was assessed using a visual analogue scale anchored at "Not at all" and "Extremely", scored as a decimal variable between 0 and 100. Participants also rated the overall importance of the decision in terms of the significance of possible outcomes using a similar VAS.

AMQ. Participants then completed the Autobiographical Memory Questionnaire (AMQ; Rubin, Schrauf, & Greenberg, 2003; Greenberg, Rice, Cooper, Cabeza, Rubin, & LaBar, 2005). The AMQ is most frequently used in neurocognitive research on memory or in the clinical research on memory processes in posttraumatic stress disorder (PTSD). Several versions of the AMQ have been developed, depending on the focus of the research project (D. Rubin, personal correspondence, April 2, 2012). The version used in this survey was based on general questions which were appropriate to inquire about the memory of an event of decision-making.

There were 19 questions in this version of the AMQ. Ten items related to the detail and specificity of the recalled event in various forms and domains (e.g., "As I remember the event, I feel as though I am reliving the original event", and "As I remember the event, I can recall the thoughts or internal conversations that I had then"). These items were scored on a seven-point Likert scale with labels "Not at all", "Vaguely", "Distinctly" and "As clearly as it were happening now".

Other items related to the significance of the event in the person's broader autobiographical narrative (e.g., "This memory is significant for my life because it

imparts an important message for me or represents an anchor, critical juncture, or a turning point", rated on a standard Strongly Disagree to Strongly Agree five-point Likert scale). The AMQ also inquired about the extent to which the event had been rehearsed or accessed in memory since the event. Participants also were asked to date the event of indecision as accurately as possible (specifying day, month and year), as well as their rating of the accuracy of their stated date.

Indecision account. Participants were then asked to write about the experience of decision-making which gave rise to the experience of indecision. Participants were presented with a large textbox in which to type their responses. Other than reminding participants to describe both the decision content and their experience of indecision, no other instructions were given. Participants were, however, asked to be as detailed as possible, while leaving out sensitive or identifiable information for confidentiality and privacy reasons.

Unlike the pilot study, only one question was asked, providing a single free-text text response for the description of indecision. This format was chosen over a more structured set of open questions due to time constraints and being mindful of the number of questions already being asked, and because of the inability to conduct further qualitative analyses on the data within the scope of the present project.

PANAS-X. Immediately after writing about their experience of indecision, participants completed the extended version of the Positive and Negative Affect Schedule (PANAS-X; Watson & Clark, 1994). They were instructed to rate the items based on the recollection of their affective state during the indecision event. The 60-item PANAS-X was chosen as it contains a much wider range of affective experiences compared with the standard 20-item PANAS. The scale still reduces to two general affective dimension scales: overall positive affect (PA) and overall negative affect (NA). There are also subscales for specific emotions, including the negative emotions of fear, hostility, guilt and sadness, and the positive emotions of joviality, self-assurance and attentiveness.

CDS-II. The Revised Causal Dimension Scale (CDS-II; McAuley, Duncan, & Russell, 1992) was included to measure causal attributions and appraisals relating to the indecision event. The CDS-II presents 12 pairs of opposing statements scored on a bipolar scale from 1 to 7. The CDS-II contains four dimensions: locus of causality (whether the cause of the indecision was internal or external to the participant), external control (whether the experience of indecision is controllable or uncontrollable by other people or situational factors), personal control (whether the experience of indecision is

controllable or uncontrollable by the participant themselves) and stability (whether the experience of indecision is invariant or changeable).

Indecision antecedents and consequences. Participants were finally presented with 17 items on a five-point Likert scale which described possible causal antecedents to indecision. These items were derived from descriptions of decision difficulty in the literature previously reviewed (e.g., Rassin, 2007; Germeijs & De Boeck, 2002; Potworowski, 2010) as well as frequently operationalised aspects of decision problems in the experimental literature (e.g., choice set size). They included items about the decision context and content choices (e.g., "Too many options" and "Too much information about each option"). Items also related to the decision-making context, process and time pressure (e.g., "Too many distractions", "Not wanting to decide at all, but wanting to keep things the way they are", "Not enough time to decide") and perceived evaluation of the decision-making process (e.g., "Worrying about what other people will think of the decision I make").

Similarly, participants rated the extent to which they experienced 10 theoretically and empirically-derived consequences or behaviours relating to the indecision event. These included decision-making behaviours such as choosing randomly, "freezing" and not making a decision at all, making a choice then trying to change or undo it, ruminating, or engaging in post-decisional counterfactual thinking. The full list of antecedents and consequences is included in Appendix 4.3.

Personality Measures

The personality measures were also completed online in the other part of the survey. The items were presented in blocks of at most 30 questions per screen, with the scale header block presented at the top of the page and repeated half-way down the page. The presentation order of the personality items within the scales, not just the order of the scales, was randomised in order to minimise any demand characteristics caused by the clustering of similar items.

IS-R and PFIS. The two indecisiveness scales included in the survey were the 11-item IS-R (Rassin et al., 2007) and the 14-item PFIS (Thompson et al., 2001) as previously described and used in the pilot study.

Indecisiveness self-perceptions. In addition to the IS-R and PFIS, participants were asked three additional questions about their self-perceived indecisiveness. Participants were asked about their overall perceived decisiveness or indecisiveness on a single VAS, anchored at "I am much more decisive than other people" and "I am

much more indecisive than other people". This question addresses perceptions of the self as a decision-maker as compared with other people, something which has not been included in other studies and indecisiveness scales.

Participants were also asked to evaluate the extent to which they believed that indecisiveness was a negative part of their self-concept; that it was something which was problematic and interfered with activities, values and relationships. Participants were also asked the extent to which they felt that indecisiveness was a positive part of their character and behaviour, and that it contributed to activities, values and relationships. These two items were also scored on a VAS as before, anchored at "Not at all" and "Extremely".

BIS/BAS Scales. The BIS/BAS Scales (Carver & White, 1994) are designed to measure stable individual differences in sensitivity on the Behavioural Inhibition System (BIS) and Behavioural Activation System (BAS), two of the main motivational systems proposed in the revised reinforcement sensitivity theory (Gray & McNaughton, 2000; Berkman, Lieberman, & Gable, 2009). The BIS/BAS Scales were also used by Spunt et al. (2009) in their study of indecisiveness. There are three BAS-related subscales: Drive (actively and persistently pursuing desired goals), Fun Seeking (seeking of new rewards and a propensity towards impulsivity), and Reward Responsiveness (sensitivity to positive reinforcements and achievement). In contrast, there is only one BIS scale, which measures the anticipation of punishment, mistakes and aversion through anxiety-relevant cues. The four filler items in the original BIS/BAS Scales were omitted given the randomised presentation of items, leaving 20 operational items.

Dialectical Self Scale. The Dialectical Self Scale (DSS; Spencer-Rodgers, Boucher, Mori, Wang, & Peng, 2009; Spencer-Rodgers, 2004) is a 32-item measure of dialectical thinking. The DSS contains three subscales (Contradiction, Cognitive Change and Behavioural Change) which address the principles of constant change and non-contradiction, dividing the notion of change into two components. The DSS measures dialectical thinking only in the domain of self-perception (J. Spencer-Rodgers, personal communication, February 3, 2012).

ZTPI-SF. The 15-item short-form version of the Zimbardo Time Perspective Inventory (ZTPI-SF; Fieulaine, Apostolidis, & Zimbardo, 2009; Zimbardo & Boyd, 1999) was also included to explore the relationship between indecision and individual differences relating to the psychological perception of time. The ZTPI-SF, like the original ZTPI, has five subscales: Past Negative (adverse attitudes about the past), Past

Positive (positive construction of the past), Present Hedonic (enjoyment and pleasure in the present), Present Fatalistic (hopeless, nihilistic orientation) and Future (planning and achievement of future goals).

DASS-21. The 21-item version of the Depression Anxiety Stress Scale (DASS-21; Lovibond & Lovibond, 1995) was included as a measure of psychopathological symptoms. The DASS-21 contains three subscales: Depression, Anxiety and Stress, which can be summed to give an index of General Psychological Distress (GPD). It is a dimensional scale based on recognised clinical symptoms, where increased scores indicate an increased frequency or intensity of symptoms or experiences in that subscale. The DASS-21 is a brief and relatively non-intrusive instrument suitable for use in a general community sample (Henry & Crawford, 2005). It has good psychometric properties and norms from community and clinical samples, including young Australians (Crawford, Cayley, Lovibond, Wilson, & Hartley, 2011).

The DASS-21 was scored using its four-point response scale *(0 = Did not apply to me at all, 1 = Applied to me to some degree, or some of the time, 2 = Applied to me to a considerable degree, or a good part of time, 3 = Applied to me very much, or most of the time)*. All other personality items used in the survey were scored on a 5-point Likert scale *(1 = Strongly Disagree, 2 = Disagree, 3 = Neither disagree nor agree, 4 = Agree, 5 = Strongly Agree)*.

Results

Descriptive Statistics

Descriptive statistics for the indecisiveness measures in the survey are shown in Table 4.2. The IS-R and PFIS again showed good internal reliability and a good fit against a normal distribution. The overall decisiveness/indecisiveness (D/I) item had a mean rating very close to the scale midpoint (M = 50.36, SD = 25.90), although there was a large spread of responses as indicated by the high standard deviation and kurtosis. Participants' mean negative self-perceptions of indecisiveness was also near the midpoint of the scale, but participants had less positive self-perceptions of indecisiveness. This mean difference of 6.367 was statistically significant ($t(324)$ = 3.164, p = .002, CI_{95} = [2.409, 10.326]).

Unlike the pilot study, sex differences were observed. Females saw themselves as more indecisive on all three measures: IS-R (mean difference = 2.884; $t(320)$ = 3.038, p = .003, CI_{95} = [1.017, 4.752]), PFIS (mean difference = 3.410; $t(320)$ = 3.460,

p = .001, CI_{95} = [1.471, 5.349]) and D/I (mean difference = 10.070; $t(320) = 3.312$, p = .001, CI_{95} = [4.088, 16.051]). No sex differences were observed for positive and negative self-perceptions of indecision (negative: mean difference = 2.022; $t(320)$ = .660, p = .510, CI_{95} = [-4.010, 8.054], *ns*; positive: mean difference = -3.044; $t(320)$ = -1.177, p = .240, CI_{95} = [-8.133, 2.046], *ns*). These analyses compared males and females, setting aside participants who identified as neither male nor female (n = 3) due to the small cell size.

Small negative correlations between indecisiveness and age were also observed (IS-R: r = -.202, p < .001; PFIS: r = -.111, p = .045; D/I: r = -.152, p = .006). Age was also associated with lower ratings on the negative aspects of indecision (r = -.176, p = .001) but had no effect on the positive aspects of indecision (r = -.016, p = .772, *ns*).

Table 4.2

*Descriptive Statistics for Indecisiveness Measures (*n = *325)*

Scale/Measure	*M*	*SD*	Skewness (*SE*)	Kurtosis (*SE*)	Range (Possible)	α
IS-R	34.71	8.07	-.065 (.135)	-.185 (.270)	13-54 (11-55)	.877
PFIS	47.37	8.39	-.139 (.135)	-.118 (.270)	26-70 (14-70)	.845
Decisiveness/ Indecisiveness	50.36	25.90	-.050 (.135)	-.991 (.270)	0-100 (0-100)	–
Negative Indecisiveness	47.99	25.61	-.238 (.135)	-.944 (.270)	0-100 (0-100)	–
Positive Indecisiveness	41.62	21.66	.015 (.135)	-.454 (.270)	0-100 (0-100)	–

There were no differences on all indecisiveness measures between participants who identified as exclusively Australian or New Zealander (n = 156) and those who did not (n = 169), with all ts < 1 (ps > .1). However, this residual ethnicity category contains significant variance. Given small cell sizes for other ethnicity groups, a comparison was made between all participants who identified, at least in part, as Asian (North-East, South-East or Southern/Central, n = 116) and those who did not (n = 209). This comparison was also informed by previous studies comparing Asian and Western populations on indecisiveness (Yates et al., 2010; Li et al., 2014; Patalano & Wengrovitz, 2007). However, unlike these studies, no significant differences were found (all ts < 1, ps > .3) at the scale level.

Table 4.3 shows the zero-order correlations between the five indecisiveness measures. The correlation between the IS-R and PFIS ($r = .876$, $p < .001$) was slightly stronger than that observed in the pilot study ($r = .783$, $p < .001$). There were also moderate to strong correlations between self-reported decisiveness/indecisiveness and the two indecisiveness scales, and between these measures and negative self-perceptions of indecisiveness. Only weak negative correlations were observed between both the IS-R and PFIS and positive self-perceptions of indecisiveness.

Table 4.3

Correlations Between Indecisiveness Scales and Items

	IS-R	PFIS	D/I	Negative Indecisiveness
IS-R	–			
PFIS	.876**	–		
D/I	.685**	.645**	–	
Negative Indecisiveness	.574**	.547**	.573**	–
Positive Indecisiveness	-.199**	-.188**	-.076	-.171**

Note. ** $p < .01$

Exploratory Factor Analyses

An exploratory factor analysis (EFA) was conducted on the IS-R only, following Spunt et al. (2009). Only one component with eigenvalues (λ) ≥ 1 was extracted on a Principal Components Analysis (PCA). Similarly, only one factor with $\lambda \geq 1$ was identified, separately, using the Maximum Likelihood (ML) fitting method, as a generalisable and true factor analytic method which does not inflate the variance estimates (Costello & Osborne, 2005). This factor had an eigenvalue of 5.061 and 4.502, respectively, and accounted for greater than 40% of the variance on both analyses. Item-factor loadings for all 11 items were greater than the recommended benchmark of .32 on both methods (Tabachnick & Fidell, 2013). This single-factor result is at odds with the two-factor model found by Spunt et al. (2009). There was no support obtained for the distinction between aversive and avoidant indecisiveness from the IS-R alone. As no other factors were extracted, no further analyses were conducted using the IS-R only.

Table 4.4

Item-Factor Loadings for a Varimax-Rotated Exploratory Factor Analysis on the IS-R and PFIS Items

Identifier	Item Text	Factor		
		1	2	3
ISR 9	I often worry about making the wrong decision.	**.674**	.186	**.424**
PFIS 6	I tend to struggle with most decisions.	**.637**	**.426**	.248
ISR 8	I become anxious when making a decision.	**.614**	.270	.205
ISR 11	It seems that deciding on the most trivial thing takes me a long time.	**.587**	.292	.155
ISR 3	I find it easy to make decisions.*	**.582**	**.577**	.207
PFIS 9	I prefer situations where I do not have to decide immediately.	**.569**	.100	.158
PFIS 3	Sometimes I become impatient over my indecisiveness.	**.537**	.214	.182
PFIS 12	I wish I did not worry so much about making errors.	**.527**	.182	.302
PFIS 4	Sometimes I see so many options to a situation that it is really confusing.	**.484**	.095	.049
PFIS 5	I can be reluctant to commit myself to something because of the possibility that I might be wrong.	**.479**	.279	.325
ISR 1	I try to put off making decisions.	**.454**	.390	.176
PFIS 14	I find myself reluctant to commit to new ideas but find little comfort in remaining with the tried and true.	.304	.102	.099
ISR 5	Once I make a decision, I feel fairly confident that it is a good one.*	.174	**.591**	.318
ISR 6	I usually make decisions quickly.*	**.460**	**.538**	.291
PFIS 2	I never put off making important decisions.*	.122	**.522**	.168
ISR 2	I always know exactly what I want.*	.196	**.509**	.062
PFIS 1	I may struggle with a few decisions but not very often.*	**.473**	**.486**	.224
PFIS 10	I rarely doubt that the course of action I have selected will be correct.*	.257	**.462**	.276
PFIS 8	Regardless of whether others see an event as positive or negative I don't mind committing myself to it.*	.067	**.440**	.051
ISR 4	I like to be in a position to make decisions.*	.308	**.432**	.018
ISR 10	After I have chosen or decided something, I often believe I've made the wrong choice or decision.	.320	**.425**	.330
PFIS 11	I tend to continue to evaluate recently made decisions.	.198	.089	**.720**
PFIS 7	Even after making an important decision I continue to think about the pros and cons to make sure that I am not wrong.	.246	.088	**.692**
ISR 7	Once I make a decision, I stop worrying about it.*	.182	.338	**.673**
PFIS 13	Decisions rarely weigh heavily on my shoulders.*	.191	.233	.260

Note. Cells with item-factor loadings of > .4 are shaded. * Item is reverse scored.

Similar analyses were conducted on the PFIS alone. While three Varimax-rotated components were obtained using a PCA, there was no clear separation of the factors, which was difficult to interpret. Using the ML method, three Varimax rotated factors with $\lambda \geq 1$ were extracted (see Appendix 4.4). These factors could be interpreted, with some struggle, as relating to aversive experience within the course of decision-making ($\lambda = 2.111$, variance = 15.075%), a global perception of decision-making as a difficult class of events ($\lambda = 1.709$, variance = 12.206%), and post-decisional rumination and regret ($\lambda = 1.495$, variance = 10.678%).

A second EFA was conducted with the IS-R combined with the PFIS (a total of 25 items) using the ML method. Although this reduced the proportion of case to items, the ratio of 13:1 was nonetheless large enough for this analysis. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy, at .931, was more than adequate, given the sample size of 325. Bartlett's test of sphericity was also significant ($\chi^2(300) = 3565.019$, $p < .001$), which was unsurprising given the case-to-item ratio, but further supports the factorability of the composite scales.

Table 4.5

Interpretation of Factors from EFA on the Combined IS-R and PFIS

Factor	Description	Eigenvalue	% Variance Explained
1	**Aversive indecisiveness** Reactive negative affect during decision-making, including decisional self-doubt and fear of invalidity through mistakes.	4.528	18.114
2	**Avoidant indecisiveness** Low sense of agency and capability as decision-maker; perceived difficulty/low confidence in attaining outcomes good. Decisions as threat and avoidance of decision-making role.	3.411	13.642
3	**Ruminative indecisiveness** Post-decisional rumination and worry, and the extension of the decision-making activity beyond choice.	2.621	10.484

Three factors with eigenvalues ≥ 1 were extracted, as shown in Table 4.4. The factor structure was then subject to a Varimax rotation, which produces orthogonal factors maximising the sum of the variances of the squared loadings. There was good separation of items between the three factors, where items across both scales were grouped together in a way that was more readily interpretable, as summarised in Table 4.5. The three rotated factor scores were saved as standardised (*z*-score) variables using the Anderson-Rubin method, producing uncorrelated factor scores for the purposes of further analysis.

Aversive indecisiveness. Factor 1 grouped together items relating to decision-making being an aversive or difficult experience. This encompassed a range of negative affective states, including anxiety, worry, impatience and confusion during decision-making (e.g., ISR 8: "I become anxious when making a decision").

Several items related to the affective states of fear or apprehension which were directed towards anticipated mistakes and errors in decision-making (e.g., PFIS 12, "I wish I did not worry so much about making errors"). Importantly, this aversive affective state was experienced as part of the decision-making activity and referred to the person's role as a decision-maker, rather than the instrumental consequences of choice. As expected, there were more items from the PFIS than the IS-R which loaded onto this factor. Several items also addressed negative emotional states which arise from negative self-perceptions and appraisals about one's decision-making capability (e.g., PFIS 3: "Sometimes I become impatient over my indecisiveness"). As such, this factor was labelled as *aversive indecisiveness.*

Avoidant indecisiveness. Factor 2 clustered together items which reflected a low sense of agency and capability as a decision-maker. Decision-making, as characterised by the items in this factor, is an instrumental activity. However, this kind of indecisiveness is the inability or undesirability to make use of decision-making as a way to achieve desired goals. Indecisiveness was the tendency to not know how to choose in order to bring about good outcomes, or even to know one's own preferences (e.g., ISR 2: "I always know exactly what I want", reverse scored). The source of indecisiveness was located in the inability to bring about the transition from one state to another, which magnified the closure and finality of the decision event (e.g., ISR 4, "I like to be in a position to make decisions", reverse scored).

A common feature of items in this factor was low confidence in decisional outcomes (e.g., ISR 5: "Once I make a decision, I feel fairly confident that it is a good one", reverse scored). As such, there was a suspicious orientation towards decisions as

threatening events and a tendency to appraise decision-making as a difficult class of psychological activity in which the self as decision-maker is passive or withdrawn. This factor was therefore interpreted as *avoidant indecisiveness*. To be clear, this describes a disposition towards avoidance of the role of the decision-maker, rather than the state-based intentional behaviour of decision avoidance.

Ruminative indecisiveness. Factor 3 was a small cluster of three exclusive items and one overlapping item which all related to rumination. The three non-overlapping items all relate to explicitly post-decisional rumination (e.g., PFIS 11, "I tend to continue to evaluate recently made decisions"). By contrast, items about worry and anticipated regret in both affective and consequentialist forms were located in the other two factors (e.g., ISR 10, "After I have chosen or decided something, I often believe I've made the wrong choice or decision", in factor 2).

Confirmatory Factor Analysis

A Confirmatory Factor Analysis (CFA) was used to test the factor structure obtained in the study. The CFA was run with the sample of 104 participants who took part in Study 2. That study also included the IS-R and PFIS. Details for this sample are described in Chapter 5. Analyses were performed using IBM SPSS Amos version 20.0 (Arbuckle, 2011).

Adequate fit was achieved on a first-order model with three latent variables (aversive indecisiveness, avoidant indecisiveness, ruminative indecisiveness), as identified in the EFA and shown in Table 4.4. Reasonable fit indices were attained despite the relatively small sample size ($\chi^2(220) = 222.961$, $p = .432$; CMIN/DF = 1.013; CFI = .953; RMSEA = .012). This model, following the EFA results, allowed items to load on more than one factor where the item-factor loading was greater than .4.

There were four items which each loaded onto two factors. The error terms for pairs of items with high modification indices within a factor were correlated where this was not inconsistent with theoretical predictions (Kenny, 2011). The correlated errors occurred between similar items from the same scale source. For instance, the error terms for PFIS 4 and PFIS 12 were correlated; both items relate to the aversive and metacognitive experience of indecisiveness prompted by the complexity of choices and outcomes. Similarly, ISR 2 and ISR 4 were both reverse-scored items relating to difficulty and uncertainty in attaining decisional outcomes.

A more parsimonious model was then run, removing as many of the cross-loaded items as possible. For three of the four items, placing the item into the highest-loading factor in the EFA did not affect the model fit. The exception was ISR 9 ("I often worry about making the wrong decision"), which loaded onto both the aversion and rumination factors and significantly affected model fit ($\Delta\chi^2(1) = 10.374$, $p = .001$). The resultant model, keeping only ISR 9 cross-loaded, is shown in Figure 4.1. This model also had acceptable goodness of fit ($\chi^2(223) = 224.041$, $p = .468$; CMIN/DF = 1.005; CFI = .983; RMSEA = .007). While the change in chi-square between the models was not significant ($\Delta\chi^2(3) = 1.080$, $p = .781$), other measures of goodness of fit improved. As a simpler model conceptually, it was also adequate in supporting the presence of three indecisiveness factors on the basis of the composite IS-R and PFIS.

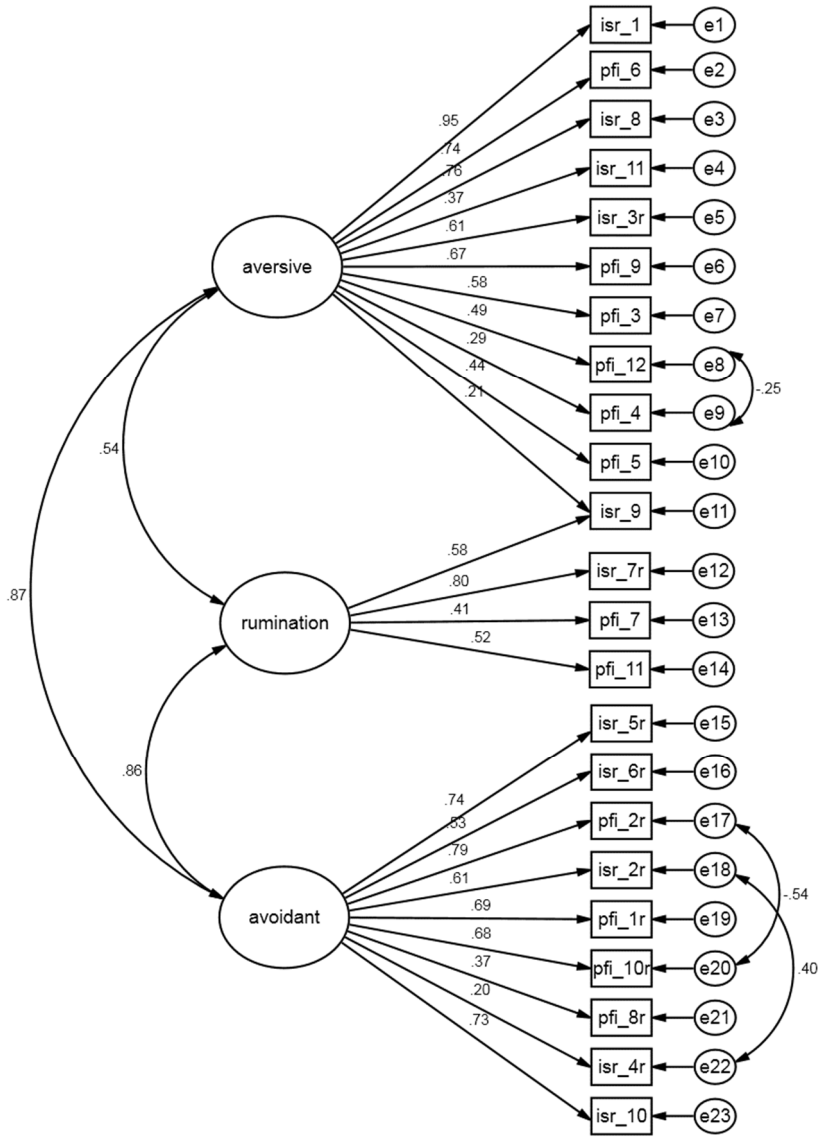


Figure 4.1. CFA model for PFIS and IS-R items on three indecisiveness dimensions ($n = 104$). Parameters are standardised estimates.

Summed Scale Scores

By way of comparison, unrefined summed subscale scores from the original sample (n = 325) were also calculated for three indecisiveness factors based on the CFA model (DiStefano, Zhu, & Mîndrilă, 2009).

Table 4.6

Descriptive Statistics for Summed Scale Score Versions of Indecisiveness Factors

Indecisiveness subscale	*M*	*SD*	α	Items	Correlation with factor score
1. Aversive	3.508	.761	.861	9	.858***
2. Avoidant	2.964	.689	.773	7	.833***
3. Ruminative	3.616	.846	.786	3	.941***

Note. *** $p < .001$

As shown in Table 4.6, the summed scale scores also showed acceptable psychometric properties. The correlations between summed scales and their respective factor scores were good, with coefficients greater than .8 (ps < .001). However, correlations between summed scores were also moderate to strong (between .476 and .629, ps < .001), as expected. The correlation matrix between factor and summed scores is in Appendix 4.5. Subsequent analyses will use factor scores, taking advantage of their orthogonality for the purposes of identifying the distinctive qualities of each indecisiveness dimension.

Indecisiveness Perceptions

Linear regressions were conducted to determine the contribution of the three indecisiveness EFA factors on self-perceptions of decisiveness/indecisiveness, positive indecisiveness and negative self-indecisiveness. These analyses controlled for the effect of age and gender. On all three variables, aversive and avoidant indecisiveness were significant independent contributors in the same direction, as shown in Table 4.7. Ruminative indecisiveness only had a weak positive association with the D/I measure and self-perceptions of negative indecisiveness. There was no effect of age or sex in any of the three analyses.

Table 4.7

Summary of Regression Analyses for Effect of Indecisiveness Factors on Perceptions of Indecisiveness

Predictor	Decisiveness/ Indecisiveness		Positive Indecisiveness		Negative Indecisiveness	
	β	*t*	β	*t*	β	*t*
Aversive indecisiveness	.511	13.172 ***	-.120	-2.162 *	.397	8.600 ***
Avoidant indecisiveness	.487	12.578 ***	-.191	-3.441 **	.376	8.178 ***
Ruminative indecisiveness	.099	2.578 **	-.035	-.637	.190	4.148 ***
Age	-.047	.233	-.051	-.922	-.079	-1.700
Sex	-.052	.183	.026	.457	.068	1.469
Model R^2_{adj}	**.533**		**.039**		**.338**	

Note. * $p < .05$, ** $p < .01$; *** $p < .001$.

Indecisiveness and Personality Measures

Table 4.8 shows the zero-order correlations between the personality measures and the indecisiveness factor scores, as well as the IS-R and PFIS total scale scores. The first observation is that there was substantial agreement between the IS-R and PFIS on almost all scales in terms of the strength and direction of the correlation. However, differences emerged at the level of the indecisiveness factor scores consistent with the multidimensional nature of indecisiveness. There were patterns of unique correlations where personality measures were associated with either aversive indecisiveness or avoidant indecisiveness only.

BIS/BAS. As hypothesised, aversive indecisiveness was much more strongly associated with BIS sensitivity ($r = .492$, $p < .001$) than the other two forms of indecisiveness. This finding is accordance with role of the BIS in regulating experiences of negative affect and sensitivity to mistake and punishment (Carver & White, 1994) and Spunt et al.'s (2009) results. Substantially weaker, but still significant, positive correlations were observed between the BIS subscale and aversive indecisiveness ($r = .176$, $p < .001$) and with ruminative indecisiveness ($r = .298$, $p < .001$).

In contrast, and contrary to hypotheses, there were moderate positive relationships between the Drive and Reward Responsiveness BAS subscales and avoidant indecisiveness. Participants who were more disposed towards pursuing their desired goals ($r = .461$, $p < .001$), or who were sensitive to positive reinforcement from decisional outcomes ($r = .327$, $p < .001$), respectively, were also more prone to indecisiveness in terms of low personal decision-making agency and appraised decisional threat. A weaker relationship between the Fun Seeking BAS subscale and avoidant indecisiveness was also observed ($r = .160$, $p = .004$), but at a similar strength to its correlation with aversive indecisiveness ($r = .131$, $p = .018$). There was no relationship between aversive or ruminative indecisiveness on the other BAS subscales.

DSS. There was an overall positive correlation between indecisiveness and dialectical thinking. This relationship was stronger with avoidant indecisiveness, supporting the hypotheses, but a similar pattern of correlations with aversive indecisiveness (but not ruminative indecisiveness) was observed. To the extent that the relationship between avoidant indecisiveness and overall dialectical thinking was stronger than the other indecisiveness factors, this was explained by the cognitive change subscale ($r = .379$, $p < .001$).

ZTPI-SF. There were positive correlations between a past negative time perspective and all three indecisiveness factors. A fatalistic view of the present was weakly associated with greater aversive indecisiveness ($r = .198$, $p = .001$). On the other hand, a present hedonic time perspective (associated with risk tasking, pleasure and enjoyment) was negatively but again weakly associated with avoidant indecisiveness ($r = -.172$, $p = .002$). Similarly, a positive (nostalgic) past time perspective was also negatively correlated with avoidant indecisiveness ($r = -.199$, $p < .001$). The strongest correlation was between a future time perspective (a conscientious, consistent and low-risk planning towards future goals) and avoidant indecisiveness ($r = -.419$, $p < .001$). Future time perspective had no relationship with aversive or ruminative indecisiveness.

DASS-21. All three forms of indecisiveness were associated with higher levels of current psychological distress, as measured by the General Psychological Distress (GPD) total index of the DASS-21. Depressive symptoms were associated with both aversive and avoidant indecisiveness more than ruminative indecisiveness. Anxiety and stress symptoms, however, were significantly more correlated with aversive indecisiveness than avoidant or ruminative indecisiveness. These results supported the hypotheses.

Table 4.8

Correlations Between Indecisiveness Factors, IS-R, PFIS, and Personality Measures

Measure	Factor 1: Aversive	Factor 2: Avoidant	Factor 3: Ruminative	IS-R	PFIS
BIS	**.492 (<.001)**	**.176 (.001)**	**.298 (<.001)**	**.540 (<.001)**	**.615 (<.001)**
BAS – Drive	.028 (.620)	**.461 (<.001)**	.006 (.920)	**.333 (<.001)**	**.275 (<.001)**
BAS – Fun Seeking	**.131 (.018)**	**.160 (.004)**	-.014 (.808)	**.178 (.001)**	**.114 (.039)**
BAS – Reward Responsivity	-.022 (.690)	**.327 (<.001)**	-.087 (.119)	**.187 (.001)**	.084 (.130)
DSS – Contradiction	**.209 (<.001)**	**.253 (<.001)**	**.124 (.025)**	**.362 (<.001)**	**.363 (<.001)**
DSS – Behavioural Change	**.196 (<.001)**	**.220 (<.001)**	.047 (.401)	**.324 (<.001)**	**.257 (<.001)**
DSS – Cognitive Change	**.183 (.001)**	**.379 (<.001)**	-.033 .547	**.380 (<.001)**	**.308 (<.001)**
DSS – Total	**.256 (<.001)**	**.370 (<.001)**	.064 (.251)	.464 (<.001)	.407 (<.001)
ZTPI-SF – Past Negative	**.322 (<.001)**	**.195 (<.001)**	**.293 (<.001)**	**.456 (<.001)**	**.458 (<.001)**
ZTPI-SF – Past Positive	-.084 (.132)	**-.199 (<.001)**	-.026 (.641)	**-.210 (<.001)**	**-.187 (.001)**
ZTPI-SF – Present Fatalistic	**.198 (<.001)**	-.054 (.335)	-.042 (.454)	.120 (.031)	.091 (.100)
ZTPI-SF – Present Hedonic	.032 (.563)	**-.172 (.002)**	.106 (.057)	-.078 (.158)	-.033 (.552)
ZTPI-SF – Future	-.020 (.726)	**-.419 (<.001)**	-.040 (.475)	**-.306 (<.001)**	**-.279 (<.001)**
DASS-21 – Depression	**.234 (<.001)**	**.205 (<.001)**	**.115 (.038)**	**.340 (<.001)**	**.330 (<.001)**
DASS-21 – Anxiety	**.270 (<.001)**	**.149 (.007)**	**.112 (.044)**	**.327 (<.001)**	**.324 (<.001)**
DASS-21 – Stress	**.292 (<.001)**	**.163 (.003)**	**.177 (<.001)**	**.363 (<.001)**	**.382 (<.001)**
DASS-21 – GPD	**.300 (<.001)**	**.199 (<.001)**	**.153 (.006)**	**.391 (<.001)**	**.393 (<.001)**

Note. *p*-values are shown in parentheses. Correlations whose 95% confidence interval (as ρ, using the Fisher *r* to *z* transformation with $n = 325$) do not overlap with another factor score's correlation with the personality scale are shaded. Correlations significant at $p < .05$ are in bold.

Indecision Experience

Indecision accounts: Descriptive statistics. All participants were able to write a personal account of an indecision experience. The length of participants' descriptions of their indecision experience ranged from 21 to 474 words, with a median length of 75 words (M = 94.540, SD = 68.508). The distribution of the word count was positively skewed as expected (skewness = 1.947, SE = .135).

The recency of the indecision experience was calculated by subtracting the survey completion timestamp (as a date) from participants' best estimate of the date of the event. The median recency was nine days, although the mean was 75.138 days (SD = 259.559), with some participants recalling highly important and vivid decision experiences from several years ago. The task of recalling the indecision experience was more effortful than not (M = 58.268, SD = 28.479) as rated on the VAS. The importance of the decision being described as similarly more important than not (M = 59.830, SD = 28.932).

Autobiographical memory. The items on the AMQ, excluding the participant's estimate for the date of the event and an ordinal-scale item about memory consolidation, were also subjected to a EFA to reduce the number of items while preserving each item's contribution as much as possible. The 16 items yielded three interpretable factors. The first factor was interpreted as representing the vivacity of the autobiographical memory of the decision event across domains (λ = 4.121, variance explained = 25.758%). This included items about engaging with the memory in terms of seeing, hearing, or reliving the event, recalling the setting, recalling what was said, and recalling the thoughts, emotions or internal conversations. The second factor contained items relating to the post-event reconstruction or narration, such as the mental rehearsal of the event, recounting the event as a story or recalling the event as words (λ = 2.109, variance explained = 13.181%). The third factor contained items about the perceived objectivity and accuracy of the memory of the event (λ = 2.057, variance explained = 12.857%). Details of the EFA are included in Appendix 4.6.

A series of linear regressions were run with the three standardised AMQ factors scores (vivacity, memory elaboration/rehearsal and veracity) as dependent variables. The predictors were the three indecisiveness factor scores, and the model controlled for recall difficulty and the perceived importance of the decision. Regression tables for all three analyses are shown in Appendix 4.7.

The vivacity of the autobiographical memory of the indecision event was predicted only, but weakly, by aversive indecisiveness (β = .109, $t(320) = 1.999$, $p = .046$). This was in line with hypotheses, although the overall effect size of the model was small ($R^2_{adj} = .057$; $F(5, 319) = 4.907$, $p < .001$). The weak effect is not surprising given the considerable individual and situational differences in the formation and retrieval of the autobiographical memory.

On the other hand, avoidant indecisiveness predicted lower levels of memory rehearsal and narrative elaboration (β = -.148, $t(320) = -3.227$, $p = .001$). Ruminative indecisiveness had a weaker effect in the opposite direction (β = .091, $t(320) = 1.991$, $p = .047$). Both findings are consistent with the overall avoidant and approach-oriented tendencies of both forms of indecisiveness, consistent with the hypotheses. These relationships were significant even after controlling for the much larger effect of the importance of the decision (β = .542, $t(320) = 11.761$, $p < .001$; $R^2_{adj} = .327$; $F(5, 319) = 32.456$, $p < .001$).

Similarly, the perceived veracity of the autobiographical memory for the indecision event was inversely related to avoidant indecisiveness (β = -.113, $t(320) = -2.048$, $p < .041$). The two other indecisiveness variables did not predict perceptions of memory accuracy in this model ($R^2_{adj} = .028$; $F(5, 319) = 2.849$, $p = .016$), emphasising the relationship between avoidant indecisiveness and reduced encoding and recall fluency about personal experiences as a decision-maker.

Positive and negative affect. The correlations between the indecisiveness scales and the PANAS-X are shown in Table 4.9. As expected, there was an overall pattern of positive correlations for negative affect scales and negative correlations on positive affect scales.

Three positive affect subscales (self-assurance: $r = -.255$, attentiveness: $r = -.171$, and surprise $r = -.144$, all ps $< .01$) uniquely correlated with avoidant indecisiveness, although the size of these correlations were small, accounting for between 2% and 6.5% of variance. Nonetheless, this is still a marked pattern of an *absence* of positive affect. This was not mirrored in the presence of negative affect. There was a near-zero correlation with the overall negative affect subscale ($r = .053$, $p = .342$), and only the hostility and fatigue subscales returned very small significant correlations. Together, these results support the hypothesis that avoidant indecisiveness is associated with a withdrawal from the activity and affective experience of decision-making.

Table 4.9

Correlations Between Indecisiveness Factor Scales and PANAS-X Subscales in Relation to Recalled Experience of Indecision

PANAS-X Subscale	Factor 1: Aversive	Factor 2: Avoidant	Factor 3: Ruminative
Positive Affect	**-.115 (.038)**	**-.186 (.001)**	.020 (.722)
Self-assurance	-.093 (.095)	**-.255 (<.001)**	-.017 (.754)
Joviality	-.075 (.178)	**-.115 (.038)**	-.044 (.428)
Attentiveness	-.090 (.104)	**-.171 (.002)**	.009 (.866)
Serenity	**-.229 (<.001)**	-.107 (.053)	**-.200 (<.001)**
Surprise	.093 (.096)	**-.144 (.009)**	.020 (.719)
Negative Affect	**.296 (<.001)**	.053 (.342)	**.152 (.006)**
Fear	**.236 (<.001)**	.060 (.284)	**.179 (.001)**
Hostility	**.252 (<.001)**	**-.110 (.048)**	.060 (.278)
Guilt	**.285 (<.001)**	.091 (.102)	**.123 (.027)**
Sadness	**.276 (<.001)**	.022 (.687)	**.167 (.003)**
Shyness	**.152 (.006)**	.071 (.205)	-.016 (.778)
Fatigue	**.168 (.002)**	**.110 (.047)**	-.018 (.742)

Note. *p*-values are shown on the second line in parentheses. Correlations whose 95% confidence interval (as ρ, using the Fisher *r* to *z* transformation with $n = 325$) do not overlap with another factor score's correlation with the subscale are shaded. Significant correlations at $p < .05$ are marked in bold.

Aversive indecisiveness, as predicted, showed a different set of results. All six negative affect subscales were significantly and positively correlated with aversive indecisiveness. Specifically, the hostility ($r = .252$), guilt ($r = .285$) and sadness ($r = .276$, all ps $< .001$) subscales were more strongly associated with aversive indecisiveness than the other two factors. The fear subscale loaded on both aversive and ruminative indecisiveness ($r = .236$ and $r = .179$, ps $\leq .001$). On the positive affect

subscales, aversive indecisiveness was only associated with lower levels of serenity (r = -.229, p < .001), which is consistent with the experience of negative affect.

Antecedents and consequences. Two further EFAs were conducted to reduce the 17 and 10 items relating to perceived antecedents and consequences of the indecision experience. Details of the EFAs are contained in Appendix 4.8. Four factors were extracted relating to the antecedents of indecision. These were interpreted as beliefs about indecision being caused by (i) too much complexity or cognitive demand (λ = 2.920, variance explained = 17.175%), (ii) not having enough decisional information or certainty (λ = 2.821, variance explained = 16.593%), (iii) worry or self-doubt about one's standing as a decision-maker, or a desire to maintain the status quo rather than to be a decision-maker (λ = 1.918, variance explained = 11.279%), and (iv) the time available to decide, which incidentally, was more strongly related to having too much time to decide, as opposed to not having enough time to decide (λ = 1.418, variance explained = 8.340%).

Table 4.10

Correlations Between Indecisiveness Factors and Perceived Antecedents of Indecision

	Factor 1: Aversive	**Factor 2: Avoidant**	**Factor 3: Ruminative**	**IS-R**	**PFIS**
1: Too much complexity or demand	**.266 (<.001)**	.042 (.451)	.017 (.456)	**.208 (<.001)**	**.209 (<.001)**
2: Not enough information or certainty	.094 (.091)	-.082 (.142)	-.010 (.859)	.031 (.580)	<.001 (.998)
3: Worry, self-doubt, status quo preference	**.184 (.001)**	.092 (.096)	**.172 (.002)**	**.247 (<.001)**	**.275 (<.001)**
4: Too much time to decide	-.041 (.466)	-.019 (.731)	-.070 (.210)	-.056 (.310)	-.077 (.165)

Note. p-values are shown on the second line in parentheses. Significant correlations at p < .05 are marked in bold.

When correlated against the indecisiveness factor scores, as shown in Table 4.10, aversive indecisiveness was uniquely correlated with the perception of having too much information or cognitive demand in the decision-making process (r = .266, p <

.001). Worry and decisional self-doubt had small correlations with both aversive and ruminative indecisiveness (r = .184, p = .001; r = .172, p = .002, respectively). There was no relationship between avoidant indecisiveness and any of the categories of perceived indecision antecedents, consistent with the hypothesised withdrawal from personal agency and authority over decision-making.

There was also no relationship between any of the indecisiveness factors and the perception of there being insufficient information or certainty in the decision-making situation, or there being too much or too little time to decide. Once again, the IS-R and PFIS scale scores agreed with each other in the size and direction of the correlations.

Three factors were extracted from the EFA of the ten indecision consequence items. The first factor grouped items relating to non-decision or decision paralysis (λ = 2.244, variance explained = 22.449%). The second factor related to regret and rumination (λ = 1.959, variance explained = 19.591%). The third factor described decision instability or vacillation (λ = 1.409, variance explained = 14.093%).

Table 4.11

Correlations Between Indecisiveness and Perceived Consequences of Indecision

	Factor 1: Aversive	**Factor 2: Avoidant**	**Factor 3: Ruminative**	**IS-R**	**PFIS**
Non-decision or paralysis	**.280 (<.001)**	.081 (.145)	.088 (.114)	**.253 (<.001)**	**.276 (<.001)**
Regret	.089 (.108)	.075 (.180)	**.300 (<.001)**	**.238 (<.001)**	**.195 (<.001)**
Instability or vacillation	**.159 (.004)**	.078 (.159)	-.047 (.401)	**.166 (.003)**	**.133 (.017)**

Note. p-values are shown on the second line in parentheses. Significant correlations at $p < .05$ are marked in bold.

As shown in Table 4.11, aversive indecisiveness was uniquely predictive of reported non-decision or decision paralysis (r = .280, $p < .001$). Unsurprisingly, ruminative indecisiveness was correlated with the recollection of experiencing regret and rumination as a consequence of the indecision (r = .300, $p < .001$). Again, there was no relationship between avoidant indecisiveness and the perceived consequences of

indecision. The PFIS and IS-R again also did not show meaningful differentiation between different types of indecision consequences and behaviours.

Causal attributions. On the CDS-II, both aversive and ruminative indecisiveness (r = .212, p < .001; r = .137, p = .013), but not avoidant indecisiveness (r = .055, p = .327, *ns*), were weakly associated with the perception that the experience of indecision had an internal locus of causality (i.e., that the indecision was caused by the person's own action and character). Similarly, both aversive and avoidant indecisiveness (r = -.228, p < .001; r = -.191, p < .001), but not rumination (r = -.080, p = .151), were associated with a lower sense of personal control or regulation over the experience of indecision (Table 4.12). Aversive experience was also weakly associated with the sense of the indecision experience being malleable and temporary (r = .151, p = .007).

Table 4.12

Correlations Between Indecisiveness and CDS-II Subscales

	Factor 1: Aversive	Factor 2: Avoidant	Factor 3: Ruminative	IS-R	PFIS
Locus of Causality *	**.212 (<.001)**	.055 (.327)	**.137 (.013)**	**.202 (<.001)**	**.287 (<.001)**
External Control	-.078 (.162)	.001 (.985)	-.029 (.596)	-.038 (.497)	-.092 (.097)
Personal Control	**-.228 (<.001)**	**-.192 (<.001)**	-.080 (.151)	**-.312 (<.001)**	**-.274 (<.001)**
Stability	**.151 (.007)**	.037 (.509)	.056 (.312)	**.126 (.023)**	**.123 (.026)**

Note. * higher scores = internal locus of causality. p-values are shown on the second line in parentheses. Significant correlations at p < .05 are marked in bold.

Discussion

The Multidimensionality of Indecisiveness

Using a composite measure, the study provided clear evidence that indecisiveness is better regarded as a multidimensional construct. This finding resolves some of the inconclusive past results which, especially using the IS(-R), which have found either one-, two- or three-factor structures but all of which operated within a

functionally singular perspective of decision-making (Spunt et al., 2009; Patalano & Wengrovitz, 2006; Swami et al., 2008).

The combination of the PFIS with the IS-R seemed to provide an interim solution. As a monolithic scale in its own right, the PFIS operated as a good overall measure of indecisiveness, being highly correlated with the IS-R and demonstrating convergent validity with the IS-R on most of the personality and experiential scales. However, its focus on the aversive experience of decision-making and the motivations of the decision-maker allowed the composite measure to include more items relating to affective and self-presentation processes.

When the IS-R and PFIS were combined in this study, a clear and theoretically meaningful three-factor structure was obtained. These factors were identified through the EFA and were supported by a CFA:

1. **Aversive indecisiveness:** a sensitivity towards strong negative and aversive affective states during decision-making and in being a decision-maker, especially in a heightened experience of anxiety, fear, tension and confusion. This aversion, negative affect and conscious struggle stems from the apprehension, self-doubt and feared invalidity from the inability to fulfil the different concurrent goals of decision-making.

2. **Avoidant indecisiveness:** a low sense of confidence and agency in the self as a decision-maker in making decisions as a way to achieve goals. Decisions are regarded as generalised threats and impediments to an incapable decision-maker, resulting in avoidant or withdrawal behaviours and a depersonalisation of the decision-maker from the decision.

3. **Ruminative indecisiveness:** engagement in post-decisional rumination (the tendency to continue thinking about recently made decisions) and worrying about both decision outcomes, decision-making processes and the meaning of the decision for the status of the decision-maker.

The primary hypothesis about a two-factor model of indecisiveness, is therefore strictly only partially supported by the study. However, the distinction between aversive and avoidant indecisiveness was clear and consistent with the hypotheses. The increased reactivity, negative affect and behavioural immersion into decision-making

associated with aversive indecisiveness was clearly differentiated from the withdrawn, dissociative but goal-driven nature of decision-making associated with avoidant indecisiveness.

The item-factor structure obtained through the composite measure helps explain the different qualities of these two primary indecisiveness dimensions compared with Spunt et al.'s (2009) results, despite using the same terminology. The greater emphasis on emotion and experience from the PFIS may have allowed these items to be more clearly distinguished from behavioural avoidance and obstructed agency.

Ruminative indecisiveness seemed to be a residual factor which was caused by the presence of a small number of items which related to post-decisional behaviours and cognitive processes. That these items about regret and rumination were not absorbed into aversive indecisiveness suggests that they are conceptually distinct. This may be the subject of further research, noting that the dimensions of indecisiveness identified do not purport to be exhaustive. It is also an indication that more work is needed on scale design, based on sound theory about indecisiveness.

Empirically, ruminative indecisiveness had a much weaker effect than aversive and avoidant indecisiveness throughout the study, on both trait and (recalled) state measures. This supports the conclusion, consistent with the hypotheses, that aversive and avoidant indecisiveness are the two primary dimensions of interest. Such a conclusion is bolstered by results showing that aversive and avoidant indecisiveness (but not ruminative indecisiveness) were similarly-weighted independent predictors of self-perceptions of indecisiveness. Both forms of indecisiveness contributed to a participant's perceived decisiveness or indecisiveness, as well as positive and negative appraisals of their own indecisiveness as part of their character and identity. Whether this is representative of lay self-beliefs about indecisiveness or points to a common factor model, the findings show that indecisiveness cannot be assumed to be unidimensional, as the label subtends motivationally different and behaviourally opposing processes.

Trait and State

While these factors relate to the trait-level construct of indecisiveness, many of the items in the IS-R and PFIS relate to state-based experiences of indecision, especially on the aversive indecisiveness factor (e.g., PFIS 4: "Sometimes I see so many options to a situation that it is really confusing"). It is therefore important to be clear about the

trait/state distinction once again, given the many theoretical problems caused by blurring the two levels, as discussed in Chapter 2.

As a self-report instrument, it is appropriate or even necessary to measure indecisiveness by reference to actual behaviours, as participants may not be able to access or validly report on underlying motivational or attentional processes. This does not mean that indecisiveness is then equivalent to the frequency of those behaviours. Aversive and avoidant indecisiveness may be seen as dispositional lenses which shape attention, motivation and the appraisal of the decision and the status of the self as decision-maker.

Indecision behaviours, in this functionalist model, are the result not only of indecisiveness but also the multiple and ever-changing demands and goals which arise from the decision-making activity itself. Three processes (good decision outcomes, good decision-making and being a good decision-maker) are included in the present model. Avoidant or aversive behaviours, such as decision procrastination or dysregulated paralysis, may be an endpoint of these processes and may be predicted by the corresponding form of indecisiveness, but the trait and state levels of decision difficulty must be kept distinct.

Personality Measures

With these cautions in mind, the personality correlates of aversive and avoidant indecisiveness can be interpreted in a way which sheds light on how decision-making and being a decision-maker is appraised and anticipated. The relationship between aversive indecisiveness and BIS, for example, shows that a precursor of the immediate negative affective reactivity, is a fear of invalidity through making mistakes in the form of bad decisions. This form of indecisiveness increases the likelihood of indecision being experienced as an aversion to deciding and being decision-maker (process and self-presentation indecision, respectively). This relationship between BIS and aversive indecisiveness consistent with the overall results of Spunt et al. (2009).

The sizeable *positive* correlations between decision threat indecisiveness and the BAS Drive and Reward Responsiveness subscales was, however, unexpected and contrary to hypotheses that there should be a negative relationship with goal-motivated tendencies. Participants in the present study who reported a stronger motivation to pursue desired goals persistently were also more likely to experience higher levels of difficulty in managing the evaluative and teleological aspects of decision-making. The

opposite finding was obtained by Spunt et al. (2009), with a negative correlation on the BAS subscales both avoidant and aversive indecisiveness.

Perhaps BAS activation and avoidant indecisiveness are two sides of the same coin. A strong motivation for attaining instrumental goals may be balanced by a realistic awareness that this is a difficult thing to do. Indeed, the importance given to goal pursuit and goal-attainment rewards may be a compensatory coping strategy because of a perceived personal inadequacy or effort needed to do so through decision-making. Nonetheless, decision-making is seen as a threat to the person's goals and status as a decision-maker. The result is an inclination towards withdrawal from decision-making and vigilance towards decisional threats, as well as the pursuit of other non-decisional ways in which goals can be achieved.

Differences on the ZTPI-SF also placed the different aspects of indecisiveness along different parts of the temporal plane. All forms of indecisiveness, including ruminative indecisiveness, were associated with a negative attitude towards the past. Zimbardo (2008) describes persons high on this time perspective as being "Smithsonians of trauma, failure, and frustration, endlessly recycling the non-modifiable past despite current good times." This relationship was expected in relation to aversive indecisiveness, but not for avoidant indecisiveness. Perhaps this was too simplistic, as a negative orientation to past time may be associated with the different kinds of indecisiveness for different reasons. It may involve reflecting on painful memories of poor decision-making in the past (aversive indecisiveness), remembering thwarted goals and decisional impotence (avoidant indecisiveness), or dwelling on past decisions and wishing that they could have been different (ruminative indecisiveness).

Aversive indecisiveness was also associated with a present fatalistic perspective. Participants high in this time perspective are more likely to have their attention and self-narratives situated in the present, but in a way which is both unenjoyable but gives rise to the feeling of being trapped, or "stuck". The time perspective is associated with the sense that life is externally controlled and one's own aspirations and goals will be thwarted, being a passive played in an unpredictable game. A fatalistic view of the present is associated with the fundamental attributional bias which attributes blame for failures and mistakes to the self, showing some alignment with the sensitivity to punishment found on the BIS (Zimbardo & Boyd, 2008).

Avoidant indecisiveness was predicted by a low orientation towards the future, also as hypothesised. A low future time perspective is associated with an inability or incapacity to plan for future outcomes and work towards optimal and concrete outcomes

even if these are a long way in the future. This finding suggests that avoidant indecisiveness is associated with pessimistic beliefs about one's ability to attain future goals. There is an inability to do what is important but unpleasant now for future reward, consistent with avoidant tendencies. However, this seems at odds with the findings on the BAS subscales. There, avoidant indecisiveness was associated with an increased motivation to pursue desired goals. Here, the same kind of indecisiveness is associated with a tendency *not* to plan, evaluate and execute decisions — or perhaps a belief that one is unsuccessful or incapable of taking these instrumental steps towards achieving valued goals, with low confidence in the outcomes as a result.

This gap between a future outcome and the present inability to reach it may be at the heart of this form of indecisiveness. The inability to connect the present and the future means that goals remain at the level of abstract and unrealised intentions. Decisions are therefore avoided outright or their threat to the decision-maker mitigated through absolving the self of commitment and responsibility, but this makes desired goals even more frustratingly unattainable and even more desired.

The indecisiveness factors were less distinct in terms of their relationship with dialectical thinking. Significant positive associations were observed between all facets of dialectical thinking and aversive and avoidant indecisiveness, not just avoidant indecisiveness as hypothesised. There was, however, a stronger association between the cognitive change subscale and avoidant indecisiveness which is in line with the original hypothesis. The cognitive form of naïve dialecticism involves actively maintaining a stance of flexibility towards one's thinking, beliefs and resolve in order to accommodate or compromise with the given situation, even if to do so goes against underlying values. As such, it entails a less definitive sense of self and less authoritative agency as a decision-maker, especially where decision-making entails the cutting off of options and possible futures.

This influence of cognitive change on avoidant indecisiveness suggests that this holistic (cf. analytic) approach to cognition may work against the as-if universe required by efficient goal-directed decision-making (Nisbett et al., 2001). Deciding for the purposes of maximising outcomes requires restricting the number of perspectives considered and having a clear preference structure, which is difficult if the world is seen as ambiguous. The act of choice also takes places as if one were an impartial, objective decision-maker, but this is problematic for someone who is constantly in flux during the activity of deciding. The result may be a disinclination towards decision-making as an instrumental activity.

A further finding was that all three DASS-21 subscales (Depression, Anxiety, and Stress) and total score (GPD), were mildly and positively correlated with each indecisiveness factor. This finding agrees with other research associating indecisiveness with psychopathology (see Chapter 7). There was a stronger correlation between stress (tension) and anxiety symptoms and aversive indecisiveness, as expected, but more clinical research is needed to examine how the different indecisiveness processes may contribute to psychopathology more widely, both in areas not directly assessed by the DASS-21 (e.g., obsessional thinking) but also as underlying psychopathological processes. For now, there is sufficient preliminary evidence that indecisiveness may be a transdiagnostic indicator of psychopathology. However, care must be taken to make not to make undue clinical inferences from trait indecisiveness or to assume that indecisiveness is inherently pathological. These issues will be explored further in Chapter 7.

Indecision Experience

Asking participants to write about a recent experience of indecision event appeared to be a satisfactory preliminary method to enliven attention and recollection about indecision as part of the psychological activity of decision-making. The structured self-report measures related to the indecision event allowed for the relationship between the indecisiveness and indecision to be examined in a novel way.

Consistent with hypotheses, aversive indecisiveness predicted the increased levels of recalled negative affect in the event, with notable correlations on the hostility, guilt and sadness PANAS-X subscales. A similar but considerably attenuated relationship was also found between ruminative indecisiveness and negative affect, which is also in line with the emotion-driven nature of rumination. There was also a smaller but also negative correlation between positive affect and aversive indecisiveness, but this could be explained by low levels of serenity.

On the other hand, avoidant indecisiveness was associated with decreased positive affect, but had no effect on negative affect. These findings were consistent with the hypothesis and other findings that avoidant indecisiveness involves a distancing of the self from the decision-making activity. There is less psychological investment in decision-making, and consequently, a flattening of emotional reactivity. The results also show that indecisiveness can either influence the experience of emotion as part of indecision in an additive or subtractive way independent of the valance of the emotion itself. That is, the relationship between positive and negative affect and the

aversive and avoidant indecisiveness was not hydraulic. This dissociation between affective processes adds further weight to distinctiveness of the aversive and avoidant indecisiveness in terms of subsequent situational affective response. As such, there is evidence that these primary forms of indecisiveness influence the experience of emotion, especially the kinds of negative affect experienced as part of process or self-presentation indecision.

The relationship between indecisiveness, indecision and autobiographical memory was also examined for the first time in this study. This was done to test hypotheses that the experience and recall of indecision depends in part on the two forms of indecisiveness. These hypotheses were generally supported. Aversive indecisiveness was associated with participants recalling and "reliving" the indecision event in more vivid detail. The opposite finding was observed for avoidant indecisiveness, which predicted a lower level of elaboration or rehearsal of the autobiographical memory, as well as a lower perception of its accuracy (Talarico, LaBar & Rubin, 2004).

These results suggest that the two main forms of indecisiveness boost or inhibit the encoding or recall of the memory of the indecision event, particularly the *autobiographical* dimension of memory, which necessarily places the decision-maker to the forefront as a protagonist. The accessibility of painful and uncontrollable experiences as a decision-maker, however, may further reinforce the expectations of future aversive experience. On the other hand, the inhibition of autobiographical memory by avoidant indecisiveness is consistent with this trait as an ongoing vigilant attentional strategy of being personally removed from cues about decision-making. The results suggest the avoidance and detachment of this form of indecisiveness result in less weight being given to past decisions as personally-significant events in one's life story.

These different effects of aversive and avoidant indecisiveness also extended to perceptions of the causality of the indecision experience. Aversive indecisiveness was associated with an internal locus of causality of the indecision as well as a lower sense of personal control. This is consistent with the dysregulated experience of indecision which forms part of process indecision, as well as the heightened awareness of responsibility but self-discrepancy as a decision-maker. There was no relationship between avoidant indecisiveness and locus of causality, suggesting that the indecision event is neither seen to be internally nor externally generated. Rather, there was a sense of apathy about the experience of indecision relative to other valued but impeded goals.

Finally, only aversive indecisiveness was associated with participants' perceptions of what caused the indecision and what happened afterwards. Aversive indecisiveness predicted participants' perception that there was too much information, complexity or required cognitive effort in the decision giving rise to the indecision. Aversive indecisiveness was also uniquely correlated with self-reported decisional paralysis, non-choice, instability or vacillation as a consequence of the indecision event. Once again, these results are in line with hypotheses and other results about the increased self-awareness and vigilance which occurs during decision-making.

The near-zero and non-significant correlations between avoidant indecisiveness and the perceived antecedents and consequences of indecision also align with other results about the detachment of the person from the activity of deciding. It may be that the goal-directed drive in avoidant indecisiveness occurs at an abstract level of construal which is disconnected from the felt experiences of indecision or the identification of concrete causes and consequences.

None of the three forms of indecisiveness were associated with the perception that the indecision was caused by time pressure or an insufficiency of information or certainty. Rather, especially in the case of aversive indecisiveness, there is a perception that there is too much information and a corresponding inability to impose structure and act on it. Contrary to some common beliefs (Frost & Shows, 1993; Rassin, 2007), indecisiveness does not seem to reflect an inherent propensity to need more information or to reduce outcome uncertainty before making a choice. Observed behaviour may be misleading here. Indecisiveness is often associated with non-decision, decisional paralysis or vacillation. These expressions may look like intentional information search or uncertainty reduction, but the underlying motivation may be very different. Within the present functionalist model, it is important to distinguish between the processes of indecision and the range of behaviours or endpoints they may produce.

Limitations and Future Directions

One aim of this study was to show that the multidimensionality of indecisiveness could be established by using available measures. While this was demonstrated, it is also the source of one of the main limitations of the present results. The IS-R and PFIS, when combined, provide a wide coverage of features of decision difficulty, but not in a balanced way. It was perhaps fortuitous that the items split relatively evenly between the aversive and avoidant factors, but there was some overlap between factors as well as repetition in items. The ruminative indecisiveness factor, as

discussed, also seemed to be comprised of remainder items which did not fit neatly into the other two factors.

Two possibilities are open for future research on indecisiveness. One would be to run a much more extensive study which includes other indecisiveness scales. These might include Germeijs & De Boeck's (2002) scale and the Melbourne Decision Making Questionnaire (MDMQ; Mann, Burnett, Radford, & Ford, 1997) which builds on Mann's (1982) DMQ (and of which the Decisional Procrastination Scale is one component). Elaydi's (2006) affectively-oriented measure could also be used with modifications so the items refer to dispositional tendencies rather than experiences in relation to a current decision. With a much bigger pool of items, better screening procedures could be used to identify poor or duplicate items in order to arrive at a neater and more comprehensive measure of indecisiveness. It might be expected that a second-order model might be identified, dividing aversive and avoidant indecisiveness into further sub-components.

However, this approach would still be athoretical in its approach to indecisiveness. A better alternative may be to design a new indecisiveness scale which is based on the present model. While much of the scale could borrow items similar to those in the IS-R or PFIS, there would also be a greater emphasis on the role of indecisiveness outside the immediate boundaries of the decision activity. This would include pre-decisional influences, such as general and ongoing attentional and anticipatory processes, as well as inclination towards post-decisional processes such as rumination, decisional instability and other ways of keeping the decision activity open even after choice. Care would need to be taken to avoid blurring the distinction with state-based indecision and instead to look for underlying motivational and functional processes which are amenable to valid self-reports.

The forced orthogonality of the factor scores used in these analyses means that the contrast between the indecisiveness factors when examined against other measures may be more extreme than would be ordinarily expected. In reality, as shown in the results of the CFA and summed scores, the three dimensions of indecisiveness are highly correlated. Nonetheless, these results accentuate functional and phenomenological differences which are helpful for the purposes of illuminating and developing the underlying theory. Once again, this correlation may be caused by the nature of the items from the IS-R and PFIS, which assumed a unidimensional approach to indecisiveness and may not have been phrased in a way which clearly distinguishes between different indecisiveness processes and motivations.

The usual limitations of relying on retrospective self-report data apply to the findings from this study. Memory of the indecision event is subject to poor encoding, retention and recall. However, one of the unique contributions of this study is to directly inquire about the form, intensity and perceived reliability of the autobiographical memory itself through the AMQ. The results showed differences in the form and attributes of the autobiographical memory which could, albeit weakly, be explained by differences in type of indecisiveness.

Asking people to recall their affective states within their experience of indecision is also not without methodological difficulty, especially if their narratives or reports go beyond the experience itself (Nisbett & Wilson, 1977). The extent to which participants were able to distinguish between anticipatory emotions (i.e., those experienced in activity of deciding) and anticipated emotions (i.e., emotions relating to the outcome of the decision) is also unclear. Nonetheless, the results from the measures of the indecision experience were useful in explicating the dimensions of indecisiveness identified from the factor analysis. Studies 2 and 3 will test these factors against indecision as induced through behavioural decision-making tasks.

CHAPTER 5:
STUDY 2 — EXPRESSION AND PREDICTORS OF INDECISION: INDECISIVENESS, SELF-REGULATION AND TASK DEMANDS

This second study shifts the focus to indecision and its effects on behaviour, while making use of the indecisiveness factors identified in the previous study. Study 1 found that aversive and avoidant indecisiveness had different motivational bases, which affected how a recalled instance of indecision was experienced. Results from that study supported a core tenet of the functionalist model which hypothesised that indecisiveness and indecision could have opposing effects on appraisal, motivation, experience and behaviour.

The objective of this in-lab experimental study was to examine the separate and combined influences of indecisiveness, the decision content and the decision-making context in eliciting different forms of indecision behaviour and experience. The study revolved around two computer-based behavioural decision-making tasks. One task was the Lexical Decision Task (LDT), which involved making rapid and sequential classifications of stimuli as words or non-words under time and accuracy pressure. The other task was the Charity Decision-Making Task (CDT), a novel sequential decision-from-experience task involving preference construction, unconstrained information evaluation and the ability to control the structure of the available information and the decision-making process.

One aim of this study was to extend Study 1 to provide further evidence of the validity of the two main dimensions of indecisiveness beyond the psychometric level. Behavioural decision-making tasks provide an opportunity to see when aversive and avoidant indecisiveness produce either approach-oriented or avoidant behaviours and self-reported experiences, and how this is affected by content and context. A further innovation of this study was the collection of process-tracing data as participants completed on-screen indecisiveness items. This method provides insights into behavioural tendencies when the decision-maker identity is merely made salient.

Another benefit of an experimental study was that it provided an opportunity to manipulate the content and context of the decision-making task. One object of inquiry was to examine the effect of self-regulatory capacity and its expenditure (in both positive and negative ways) on indecision. Self-regulation is an important part of process indecision, which relates to the difficulty of being a good decision-maker and managing the multiple demands on the self. Self-regulatory capacity and demand is

usually not accessible via self-report, but can be measured using psychophysiologically, including through measures of heart rate variability (HRV) (Segerstrom & Nes, 2007). Participants' heart rate was therefore recorded at baseline and throughout the study to yield HRV indices which can be interpreted as self-regulatory indicators.

Two experimental factors were included in the CDT, manipulating both the content of the decision problem as well as the role and responsibility of the participant as a decision-maker. By placing less emphasis on the difficulty of rational evaluation or optimisation of decision alternatives and not specifically drawing attention to the participant's indecisiveness, the study aimed to elicit and examine process indecision in particular detail. At the same time, the study acknowledged that outcome indecision can give rise to process indecision. This is explored by looking at the interaction between the cognitive difficulty of selection and the decision-maker's role in the CDT.

The study used multiple measures to inquire about indecision. These included classic behavioural measures of indecision, such as decision time and the extent of information seeking. Self-reported experiences, changes in affective state and psychophysiological data were also measured. The multi-method approach is necessary as part of a functionalist model which separates indecision behaviours from indecision processes. As Study 1 began to show, both arousal/approach and avoidant/withdrawal behaviours might be triggered by the same indecision process, depending on situational demands and the role of indecisiveness. This study is therefore not a quest for unique markers of each indecision process. It instead relies on inferences from behaviour and experience in response to experimental conditions and the participant's indecisiveness to comment on indecision, particularly process indecision.

Lexical Decision Task

Different versions of the LDT have been used for a wide range of purposes in experimental psychology. It is often used as a priming task or as an implicit test of the accessibility of a previously-primed concept. The LDT is also used to explore topics such as language processing, semantic and lexical memory, and inhibitory behaviour (e.g., Perea & Rosa, 2002; Marí-Beffa, Hayes, Machado, & Hindle, 2005; Mackay, Shafto, Taylor, Marian, Abrams, & Dyer, 2004). More recently, choice behaviour in the LDT has been explained using dynamic models of decision-making (Ratcliff, Gomez, & McKoon, 2004; Ratcliff & Smith, 2004; Wagenmakers, Ratcliff, Gomez, & McKoon, 2008). These models posit that accumulating evidence over time affects the

"drift" between the two response boundaries (i.e., word or non-word), with the decision terminating when either boundary is reached.

In this study, a non-priming version of the LDT was used because of its properties as a minimal decision-making task. It requires rapid-fire choices where immediate feedback is provided if errors are made, but otherwise no consequences are attached to the outcome. The LDT is also well-defined and bounded task with little discretion as to how the participant goes about or finishes the role of decision-maker (short of withdrawing from the study, as participants are of course free to do). Within each decision, there is also little opportunity for reflection or deliberation and no opportunity or need for additional information seeking. The stimulus is the only piece of information to process before a choice is made. As such, the task minimises the opportunity for consciously deliberative decision-making which could give rise to outcome indecision.

Nonetheless, even the LDT provides a window into the microcosm of cognitive processes involved in decision-making. However, these evaluative processes are only one part of the broader psychological activity of decision-making of interest here. The LDT is also not explicitly framed as a decision-making task, unlike the CDT, but instead resembles a test of cognitive ability which may shape appraisals of the task in a way which lessens the salience of the self as a decision-maker (Halkjelsvik & Rise, 2015). This is intended to avoid the emergence of self-presentation indecision.

The LDT was also used with the aim of depleting participant's psychological resources through making a large number of consecutive choices as quickly and as accurately as possible. Repeated decision-making is known to deplete self-regulatory capacity and creates a state of "decision fatigue" (Vohs et al., 2014; Segerstrom & Nes, 2007). Admittedly, the Stroop task (and its variants) is far more commonly used to induce self-regulatory depletion through decision-making (Ferrari & Pychyl, 2007). The LDT was used in this study as a legacy of an earlier aim of this project, which was to apply Ratcliff and colleagues' diffusion model to indecisiveness and indecision. This line of inquiry was not pursued.

Nonetheless, the LDT shares core characteristics of the Stroop and other tasks, requiring repeated and accurate categorisations of stimuli under time pressure. One potential advantage of the LDT is that the wider pool of stimuli allows more decisions to be included in the task, and therefore possibly allows more depletion to occur with less conscious boredom and disengagement through repetition. The LDT was therefore hypothesised to deplete self-regulatory capacity of the decision-maker in a way which

would increase the likelihood of process indecision due to the impaired motivation of good decision-making.

The order in which participants completed the LDT and CDT was therefore used in an exploratory way as a manipulation of the participant's self-regulatory capacity. Where the LDT was completed first, it was hypothesised that participants would be more decision fatigued by the task, and that this fatigue would carry through into the CDT. This effect would provide an opportunity to examine decision-making and indecision in the CDT under the state of greater depletion (LDT then CDT) or at baseline (CDT then LDT).

In addition to its hypothesised effect on self-regulatory capacity, the LDT can also be a consciously stressful task. The source of this stress is not located in goal-relevant outcomes or the participant's standing as a decision-maker, but in the immediate demands of the task. It is therefore subject to how the participant appraises the LDT, which is hypothesised to be shaped by underlying levels of avoidant and aversive indecisiveness. People with higher levels of aversive indecisiveness are expected to be more sensitive to the time pressure and immediate feedback on mistakes, and to appraise this as an activity in which their decision-making ability is pushed beyond their comfort zone. As such, it is expected that aversive indecisiveness would be associated with longer response times, more errors, and increased levels of both self-reported awareness of indecision and psychophysiological stress.

On the other hand, the LDT had little relevance to participants' abstract or "big picture" instrumental goals. The LDT afforded little room for participants' agency as a decision-maker to come under threat. As such, it was unlikely that the task would prompt a defensive reaction even with for participants higher in avoidant indecisiveness. In the absence of dysregulated stress and self-fulfilling impairment within the decision activity, higher levels of avoidant indecisiveness are expected to be expressed as shorter response times without any impairment to accuracy. This can still be regarded as indecision behaviour, but of the withdrawal and dissociative kind.

Charity Decision Task

The CDT was a novel decision-from-experience task in which participants sequentially explored text descriptions of Australian charitable organisations, choosing one to which a small monetary donation would be made on their behalf. In terms of overall design, the CDT was similar in nature to the college course information board paradigm used in previous studies of indecision (Ferrari & Dovidio, 2000; Patalano &

Wengrovitz, 2007). Both tasks require participants to evaluate a range of alternatives before selecting one. However, the CDT contained additional features designed to increase both the realism and complexity of the decision. This was in order to elicit a wider range of indecision processes and behaviours which depend on there being freedom of the decision-maker to take ownership and control over not only what is decided, but how the decision is made.

Instead of choosing a college course based on categorical attributes which could be directly compared (e.g., the course attribute of "Instructor Quality" having three potential values of Good, Fair or Poor: Patalano & Wengrovitz, 2007), the CDT relied on lengthier textual descriptions of real-life charities. The descriptions of the charities were therefore open to interpretation and subjective preference construction. This method was chosen in part to minimise the perception that the task was a problem that could be optimally solved by tallying and evaluating the attribute values.

Participants in the CDT perused the text one charity at a time at a time, rather than uncovering masked pieces of information across all alternatives set out in a grid in the information board paradigm. Participants in the CDT also had some control over how many alternatives were available and known to them. At the same time, the task retained a degree of uncertainty, as common in decision-from-experience tasks, by not specifying the number of charities which remained unseen. The required agency to navigate through the informational space provides a more realistic environment for indecision to be expressed. This could be in the form of delay or decision deferral through additional information search, but could also be restricted and rushed selection driven by avoidant motivations.

The monetary donation at the end of the CDT meant that the participants' choices had real consequences. This was a departure from the hypothetical choices and fictitious scenarios of previous studies, and also stood in contrast to the stressful but non-consequential nature of the LDT. The increased personal significance of the decision was intended to increase the likelihood of indecision by affecting both the weight of the outcome and the participant's role as a decision-maker in a decision which actually feels like a real-life choice. Unlike the LDT, this was intended to give rise to the responsibility and conscious difficulty of decision-making, even in the absence of time stress.

The CDT contained two experimental factors which were also designed to affect the kinds and extent of indecision that may be experienced. The first factor manipulated the similarity of the set of charities. This manipulation is informed by previous studies

finding that increased similarity of alternatives increases the difficulty of evaluation and selection, and therefore the likelihood of outcome indecision (Rassin et al., 2008; Dhar, 1997; Anderson, 2003; Patalano & Wengrovitz, 2007). It also follows from the results of Study 1, where aversive indecisiveness was found to be associated with perceptions that decision alternatives were too similar. The hypothesis was therefore that outcome indecision would be more likely in the high similarity (difficult evaluation) condition at the main effects level, observed through greater decision time and information search.

The second factor manipulated the salience of the participant's responsibility as a decision-maker and the importance of good decision-making processes. Drawing attention to the participant's agency while informing them that their decision-making process would be monitored and assessed was anticipated to be relevant to the motivations which underlie process indecision. As such, greater indecision behaviour and self-report was expected in in the high self-focus condition, also at the main effects level. These hypotheses so far are based on the assumption that indecision is affected by the contents and framing of the decision-making task. Of course, this is not the sole determinant.

It was therefore expected that individual differences in participants' indecisiveness dimensions would again influence CDT behaviour, both as independent effects and as interaction effects together with each experimental manipulation. Like in the LDT, aversive indecisiveness was hypothesised to predict greater arousal and activity, reflected in delay and increased search. Avoidant indecisiveness was expected to predict the opposite, with greater withdrawal and dissociative behaviour leading to curtailed decision-making processes. Both indecisiveness dimensions were hypothesised to have a synergistic effect on indecision behaviour in the high self-focus and high similarity conditions.

Psychophysiological Stress and Self-Regulatory Capacity

There has been very little research on psychophysiological processes in indecision. How the mind and body anticipate, regulate and respond to the various kinds of difficulty of decision-making is an important research question given the many connections between indecision and self-regulation, arousal and stress (Janis & Mann, 1977; Botvinick & Rosen, 2008; Van Harreveld et al., 2009; Heereman & Walla, 2011). Decision-making, after all, is not a purely cognitive endeavour, nor can it be satisfactorily explained by adding the affective to the cognitive. Decision-making also has dynamic somatic and interoceptive antecedents and consequences (Damasio, Everitt,

& Bishop, 1996; Crone et al., 2004). While these self-regulatory processes are usually outside of consciousness, they are not entirely "invisible" in that they can be measured using psychophysiological techniques (Segerstrom & Nes, 2007). Measures of HRV were used in this study for both practical and theoretical considerations.

Theoretical considerations. HRV is the systemic and dynamic pattern in the variation in the time between consecutive heartbeats. That is, HRV is not just a measure of instantaneous heart rate. Instead, components of this interbeat variability reflect different physiological processes which have different or antagonistic functional characteristics (Kara, Nykodym, & Somers, 2003; Rajendra Acharya, Paul Joseph, Kannathal, Lim, & Suri, 2006).

Specifically, measures of HRV provide markers of the activity and interplay between the sympathetic nervous system (SNS) and parasympathetic nervous system (PNS). HRV indices provide objective data about both excitatory and inhibitory processes in response to physiological or psychological stimuli (Appelhans & Luecken, 2006). During physical or psychological stress, SNS activity increases, resulting in increased cardiac activity. The PNS on the other hand is like the brake pedal to the accelerator of the SNS. It is dominant when the body is at rest and during activities which do not require immediate reactions. The result of this process is decreased cardiac activity and a slower heart rate. Instantaneous heart rate is a combination of both processes, so an increase in heart rate could be either the result of the downregulation of the PNS or the activation of the SNS.

The ability to rapidly regulate these two complementary processes in response to immediate demands is necessary for adaptive functioning. As such, increased HRV is not only a sign of good cardiovascular health, but is also a marker for good overall psychological health (Geisler, Vennewald, Kubiak, & Weber, 2010). Just as it is adaptive to respond physiologically to immediate physiological challenges, it is also important to be able to respond rapidly to psychological challenges. Indeed, the distinction between physiological and psychological challenges may be artificial given the somatic afferents of emotion.

Because SNS and PNS activation and deactivation have different temporal patterns of activation and deactivation, it is possible to observe the moment-by-moment relationship between the two processes. This is where HRV is useful beyond instantaneous heart rate. Frequency-domain measures of HRV are commonly used for this purpose. These measures decompose the corrected time sequence of interbeat intervals to yield separate indices of sympathetic and parasympathetic activation.

Appelhans & Luecken's (2006) review concluded that HRV indices can be used as an "objective measure of individual differences in regulated emotional responding, particularly as it relates to social processes and mental health" (p. 236). Maladaptive forms of coping are associated with lower HRV. Lower HRV has also been observed in depression, especially under stress (Hughes & Stoney, 2000; Gorman & Sloan, 2000). Similarly, anxiety and other psychopathological states also tend to co-occur with impaired variability at both baseline and during acute worry or stress. On the other hand, Ramírez, Ortega & Rayes del Paso (2015) found that increased variability in the high-frequency band of HRV (HF-HRV; 0.15–0.4 Hz) is a buffer against the deleterious effects of anxiety on attention and decision-making.

Moreover, HRV appears to be a good measure of both self-regulatory capacity and exertion or stress (Segerstrom & Nes, 2007; Geisler et al., 2010; Geisler & Kubiak, 2009; Reynard, Gevirtz, Berlow, Brown, & Boutelle, 2011). It is important to distinguish between these often-confused concepts. Self-regulatory capacity, also known as self-regulatory strength, is a variable pool of self-regulatory resources which a person can draw on under stress or exertion. Capacity can be measured using a resting (tonic) HRV recording, with higher tonic HF-HRV reflecting higher levels of capacity, which predicts adaptive performance on subsequent tasks which place demands on executive functions (Thayer, Hansen, Saus-Rose, & Johnsen, 2009).

In this study, measurements of tonic HRV provided a way to examine participants' self-regulatory capacity in relation to individual differences in avoidant and aversive indecisiveness. It was hypothesised that aversive indecisiveness would be associated with lower tonic HRV, indicative of lower levels of self-regulatory capacity and flexibility which predicts poorer decision-making during tasks, especially under stress. This hypothesis reflects the position taken in this thesis that indecisiveness not just a frequentative trait but reflects ongoing attentional processes and resources.

HRV can also be used as a measure of within-task exertion or stress. This is the extent to which a task is drawing on a person's self-regulatory capacity and the manner in which resources are being used. Exertion or stress can be identified through within-task (phasic) HRV recordings, particularly looking at the extent of HRV change compared against baseline. Although the empirical findings here are not always in agreement, Park, Vasey, Van Bavel, & Thayer (2014) concluded that phasic HRV suppression (i.e., lower HF-HRV compared against baseline) can be regarded as an indicator of a protective and defensive autonomic stress response in response to an immediate stressor. Phasic HRV enhancement (i.e., higher HF-HRV compared against

baseline), on the other hand, is indicative of adaptive self-regulatory effort during the task (Segerstrom & Nes, 2007; Appelhans & Luecken, 2006). Park et al.'s (2014) interpretation of phasic HRV is directly consistent with the biopsychosocial model of challenge and threat-based stress states mentioned in Chapter 3 (Croizet et al., 2004; Jamieson, Mendes & Nock, 2013; Blascovich, 2008).

Tonic and phasic HRV, and therefore self-regulatory capacity and exertion, are of course connected. Smith et al. (2011), for instance, found that that temporary phasic HF-HRV suppression during a task is a valid indicator of the extent to which self-regulatory capacity has been depleted in a way which affects subsequent tasks. The use of the LDT to elicit decision fatigue was intended to temporarily deplete self-regulatory capacity, as measured using indices of phasic HRV and HRV change from baseline. As these relationships between HRV and self-regulation have not previously been tested in relation to indecision and indecisiveness, the methods and analyses in this study retained an exploratory flavour.

Phasic HF-HRV suppression was expected as a consequence of the repeated decision-making in the LDT, resulting in the temporary depletion of self-regulatory capacity. This would allow an examination of decision-making and indecision in the CDT either under a state of depletion or non-depletion, depending on task order. It was also hypothesised that only aversive indecisiveness would be associated with greater phasic HF-HRV suppression during both tasks, associated with a defensive stress response.

Practical considerations. Pragmatically, the electrocardiographic heart-rate monitoring apparatus required for HRV analyses was relatively non-intrusive and simple to set up. One important consideration was that the two decision-making tasks required participants to use both hands. Participants were required to use a computer keyboard, mouse and a push-button interface. This ruled out the use of finger-positioned skin conductance recording, which would be affected by the noise generated by movement and muscle activity. Frequency-domain indices of HRV also meant that the decision tasks did not need to be of identical duration across participants. This was important given the need for unconstrained decision-making intervals in order to observe indecision through decisional delay. HRV indices have also been shown to be reliable and valid for brief recordings, including periods under 60 seconds (Kleiger et al., 2005; Salahuddin, Cho, Jeong, & Kim, 2007).

Process Data from Indecisiveness Scales

A further innovative component in this study was the measurement of process tracing data, also known as *paradata* (Stieger & Reips, 2010), during participants' response to the indecisiveness scales. In decision-making research, process methods allow experimenters to examine at not just what participants choose, but how they went about the decision (Schulte-Mecklenbeck, Kühberger, & Ranyard, 2011; McKinstry, Dale, & Spivey, 2008). These methods provide a parallel source of data from which inferences about mental processes can be made from the temporal and spatial dynamics of lower-level (e.g., motor) processes during the activity of decision-making.

The collection of paradata while participants complete indecisiveness scales does not appear to have a precedent. Simple exploratory paradata measures were included in this study. These were participants' response time to each indecisiveness item, the number of selections participants made on each item (as a proxy measure of prevarication or response oscillation), and a distance-based measure of mouse movement per item.

This method was included in the present study because being asked about one's own indecisiveness is not a neutral event. There was no hypothesised effect of aversive indecisiveness, because it was considered that the act of completing a questionnaire would not itself be an aversive decision event. It is not a particularly stressful or cognitively demanding endeavour, or one where obvious mistakes can be made.

However, the questions are probing of the participant as a decision-maker. A participant cannot respond in a completely disinterested way without having at least some parts of their identity and competence as a decision-maker placed under scrutiny, and in a way that draws particular attention to the negative dimensions of their indecisiveness. As such, withdrawal behaviours such as decreased time and information search are expected with increasing avoidant indecisiveness. Indecisiveness and self-presentation indecision is anticipated to be relevant to situational appraisals and behaviour even at these margins of decision-making when an undesirable decision-maker identity merely is brought into focus.

Method

Participants

One hundred and fiveparticipants took part in this study. Due to a power failure during the middle of one session, data from one participant were lost, leaving a working sample of 104. Over half (59.6%, $n = 62$) of the sample were female, with the remainder (40.4%, $n = 42$) identifying as male. Participants were recruited from the ANU community through using notices to first-year psychology students and posters placed around campus. Just over half of the sample (54.4%, $n = 56$) were psychology students. The median age of the participants was 20 ($M = 20.17$), with a range of 18 to 31. Almost three-quarters (73.1%, $n = 76$) of participants were native English speakers.

The study was advertised as an in-lab "charity decision-making study". Participants were told that in addition to personality measures and other decision-making tasks, the study would include an opportunity to make a small monetary donation to an Australian registered charity. Participants were told that the donation would be made on their behalf; that is, the participant would not be contributing her or his own money. This donation amount was independent of the incentive for participation, which was either A$10 in cash or one hour of research participation credit for first-year psychology students.

Participants were also informed in the recruitment materials that the study would involve a wearing a chest-strap heart rate monitor for the collection of psychophysiological data. Participants who had a current diagnosis of a cardiac problem or were on any medication that may affect cardiac or nervous system function were excluded from participation. The study received approval from the ANU Human Research Ethics Committee (see Appendix 5.1).

Materials

Demographic questions included the participant's age, gender, ethnicity and native English status. As per Study 1, participants completed two indecisiveness scales, the IS-R and PFIS. Participants also completed the International Positive and Negative Affect Schedule, Short Form (I-PANAS-SF; Thompson, 2007). This is the 10-item version of the PANAS (cf. the 60-item extended PANAS-X used in Study 1), which separates into positive affect (PA) and negative affect (NA) scales. The I-PANAS-SF

was completed at the beginning and end of the study as a measure of affective state before and after the decision-making tasks.

To account for social or political beliefs which may influence participants' desire or interest in giving money to a charity, the personality measures included the seven-item Global Belief in a Just World Scale (GBJWS; Lipkus, 1991). A higher belief in a just world is associated with lower levels of altruism and social justice. This has been shown to be reflected in reduced empathy for people with disabilities and increased scepticism towards charitable giving (Furnham, 1995). Participants also completed a one-item political attitudes measure on a visual analogue scale anchored at "Extremely Liberal" and "Extremely Conservative" as another way to account for socio-political confounds on charity decision-making behaviour.

Apparatus

Computing environment. Participants completed the study individually in a lab at the ANU Research School of Psychology. Participants were seated at a desk in front of a 22 inch (56 cm) widescreen LCD monitor at a resolution of 1680 x 1050 pixels, connected to a desktop computer running Windows XP. In addition to a standard keyboard, and two-button wired optical mouse, an Optimus mini three 2.0 input device was also placed on the desk. This is a small, rectangular USB keypad containing three 32 x 32 mm momentary push buttons. While the buttons are also customisable LED displays, no images were shown and the device was used only as a passive input device. This device was used for the LDT and was preferred over the keyboard or mouse, as it was anticipated that the large buttons would minimise keystroke error and would be more ergonomic for a repeated and reaction-time sensitive task.

A Python 2.6 script was written to monitor button presses on the Optimus mini three device and to translate these into keyboard events which could be captured by the experiment script. Any latency introduced by this script would be of insignificant magnitude relative to the nature of the reaction times being measured and would also be disproportionately difficult to quantify.

The experimental task was coded and designed in Adobe Flash Professional CS5.5 (Adobe Systems, 2011). This platform was chosen as, at the time, it provided a good balance of data handling, an object-oriented programming environment and a canvas for simple user interface design. The Flash code was compiled as a standalone executable and run in full-screen mode.

Psychophysiological data acquisition. Psychophysiological data were acquired by way of a Thought Technology Procomp Infiniti encoder connected via fibre-optic cable to another computer in the lab. This computer ran the BioGraph Infiniti 5.1 software (Thought Technology, 2011). A Thought Technology SA9330 EKG Receiver was connected to one of the high-resolution channels of the Procomp Infiniti encoder. This module received heart rate signals transmitted wirelessly from a Polar Wearlink 31 transmitter which was in turn attached to a flexible chest electrode strap worn by the participant. After each session, the chest strap was washed, disinfected and dried. All surfaces were wiped down using a hospital-grade disinfectant.

The wireless Polar technology was preferred over a standard 3-lead (Lead-I) wired ECG setup where electrodes are placed on the right arm (RA) and left arm (LL) and left leg (LL). While this is an optimal configuration for resting ECG measurement, the signal is susceptible to substantial electromyographic (EMG) noise from muscle movement (Combatalade, 2010). This was considered unacceptable, since using the mouse or keyboard would be a significant source of such noise. Placing the electrodes in an inverted triangular pattern only on the chest yielded less EMG noise in pilot testing but was still unacceptably sensitive to movement. Using a wired Lead-I procedure would also have been physically invasive, as experimenter intervention would be needed to attach or verify the placement of the electrodes.

These problems were obviated by the use of the Polar apparatus, which could be attached by the participant without assistance and with minimal interference. The Polar chest strap transmitter, designed for heart rate monitoring during exercise, is much more tolerant of movement. The trade-off for convenience and minimal interference was resolution, although the 1000 Hz sampling rate of the Polar Wearlink transmitter (cf. 2048 Hz using a wired ECG configuration) is more than sufficient for valid HRV analysis (Task Force of the European Society of Cardiology the North American Society of Pacing Electrophysiology, 1996). Both Radespiel-Tröger, Rauh, Mahlke, Gottschalk, & Mück-Weymann (2003) and Nunan, Donovan, Jakovljevic, Hodges, Sandercock, & Brodie (2009) found that Polar wireless heart-rate monitor devices yielded almost identical results to the “gold standard” wired Lead-I configuration for assessing HRV. Williams et al. (2016) showed that HRV data recorded from Polar equipment had excellent validity and reliability.

The Biograph Infiniti software recorded data from the Polar sensor which were saved as delineated text files containing normal-to-normal (N-N) interbeat intervals (IBIs) in milliseconds. Events from the experimental task, such as the beginning or end

of a task or a critical action like confirming a choice, were sent from the experimental computer to the psychophysiology computer through the building's gigabit Ethernet infrastructure. This was achieved by using a Python 2.6 script which ran as a server on the psychophysiology computer. The Flash application on the experiment computer opened a persistent connection with the server on the psychophysiology computer. When certain events occurred, the Flash script sent a message to the server. This was received and immediately translated into a keystroke which could be interpreted by the Biograph Infiniti software as an event marker, which was timestamped and included in the data file. Once again, any latency introduced would have been minimal and not of practical significance.

HRV indices were then derived from the N-N interval time series data using Kubios HRV version 2.0 (University of Kuopio, 2012; Tarvainen, Niskanen, Lioopnen, Ranta-aho, & Karjalainen, 2014). In addition to algorithmic tools, visual analyses of the IBI plots were conducted to identify and filter out ectopic beats or other artifacts. However, such anomalies were rare given the nature of the Polar equipment. Each sample was also detrended using the smooth-priors algorithm (with $\lambda = 500$) in Kubios, consistent with standard practice (e.g., Luque-Casado, Perales, Cárdenas, & Sanabria, 2016; Trevizani et al., 2015). Each participant's N-N time series was then segmented using event marker timestamps for each part of the study. Separate HRV indices were calculated for each segment.

Charity donations. A transparent coin jar was placed on the desk, with a label was affixed to the side indicating that the contents of the jar were to be donated to charities. The jar contained a float amount of coins making the jar about one-third full. This level was kept constant across participants. Two A$1 coins were placed on the desk next to the jar. The participant was informed during the briefing that there would be an opportunity to donate this money to a charity at the end of the study. Participants also had the option of opting-out of the charity donation process. However, no participants exercised this option.

Procedure

To minimise systematic extrinsic bias in the psychophysiological data, participants were asked ahead of time to refrain from vigorous exercise for at least four hours before the study and to avoid consumption of stimulants such as caffeine or nicotine (Park et al., 2014; Appelhans & Luecken, 2008). All participants reported complying with these directions.

Once inside the lab, participants received a verbal briefing by the experimenter about the nature of the study. This information was also contained on a printed information sheet. After any preliminary questions were addressed, participants gave their informed written consent. Participants were then instructed about how to wear the chest strap heart rate monitor. Without the experimenter in the room, the participants then put on and adjusted the chest strap. Once this was done, the experimenter re-entered the room and verified that a clean signal was being received from the heart rate monitor. The participant was then instructed to sit at the experiment computer and follow the instructions on-screen. The experimenter left the room again and for the remainder of the study. The progress of the study was monitored remotely through an encrypted link to a real-time log file.

After completing the demographic questions and the pre-task I-PANAS-SF, the study began with a five-minute baseline heart rate measurement period. Participants were instructed to sit quietly with eyes open, and to keep as still as possible until instructed by an on-screen message what to do next.

Once the baseline measurement was complete, participants completed the personality items. Items were presented in random order, with one item per screen. A standard 5-point Likert scale (Strongly Disagree to Strongly Agree, as per previous studies) was used, with the radio buttons and labels appearing in a fixed position on screen. Participants responded to these questions using the mouse. To capture the paradata in relation to how participants engaged with the questions, the mouse cursor position (as Cartesian screen coordinates in pixels) was recorded at 250 ms intervals. Each radio button selection and change was also recorded in the timestamped log. This procedure was adapted from that used by Stieger & Reips (2010). A one-minute rest period followed the completion of this part of the study.

Participants then began either the Lexical Decision Task (LDT) or the charity decision-making task (CDT). The order of the tasks was selected randomly and formed the experimental manipulation of task order. Details about these tasks are set out below. At the end of first task, participants rested again for one minute before continuing on to the next task. After completing both decision tasks, participants completed the I-PANAS-SF again and were asked the small number of demographic questions. At the end of the study, participants were debriefed, thanked, received course credit or payment as appropriate, and placed the coins to be donated into the jar.

Lexical Decision Task. The LDT was a shortened version of the design used by Ratcliff, Gomez, & McKoon (2004). Participants were presented with a series of letters

on-screen and were instructed to decide if the stimulus was an English word or not. The word pool was gratefully supplied by Roger Ratcliff (personal communication, April 4, 2010). This set contained 815 high-frequency words (e.g., COFFEE), 868 low-frequency words (e.g., CORROSION) and 741 very-low-frequency words (e.g., TELEOLOGIC). Words ranged from three letters in length (e.g., BAR) to 13 letters in length (e.g., CLARIFICATION). The word list was localised from American to Australian English where needed (e.g., changing CRITICIZE to CRITICISE and COLOR to COLOUR).

A pseudoword was generated from each (real) word by randomly replacing all vowels with other vowels. For instance, the pseudoword for OPERATION was EPIRETUIN. These transformations were performed through a Perl script, with an in-built dictionary check to ensure that replacing the vowels did not incidentally result in another valid Australian English word. The pseudowords were manually screened, with the additional assistance of a simple Markov Chain-based pronounceability algorithm, to ensure that the stimulus had the qualitative appearance of a word and not merely a random series of letters.

The LDT contained 20 blocks containing 30 trials, resulting in 600 stimuli per participant. This was shortened from the 50 blocks used by Ratcliff et al. (2004) due to time constraints and anticipated fatigue effects, given the other parts of the study. The 30 stimuli in each block were drawn from five high-frequency, five low-frequency and five very-low-frequency words and 15 pseudowords randomly selected without replacement over the entire task. Pseudowords were also drawn from the three frequency pools in the same proportion. Once a participant had been shown a word or pseudoword, it did not appear again in any other block. Moreover, participants were never presented with both a word and its derived pseudoword.

Participants were oriented to the task through on-screen instructions. Once participants had read and understood the instructions, they pressed a button on the Optimus keypad to start the task. Participants completed a full-length (30 trial) practice block before beginning the 20 proper blocks. Participants were not informed of how many blocks or trials would be in the task, or how many were remaining.

At the beginning of each block, participants were shown a fixation cross in the centre of the screen for two seconds. The word/non-word stimuli appeared in upper case, centred in the same position. Each stimulus appeared on screen until participants classified it as a word or non-word. Responses were made using the Optimus keypad. Participants were instructed to have one hand each over the “Word” and “Non-word”

buttons during the task to facilitate quick responding. As per Ratcliff et al.'s (2004) procedure, if the response was incorrect, the word "ERROR" appeared in red for 750 ms below the position of the stimulus word. If the response was correct, the stimulus disappeared and the next stimulus was presented following an inter-trial interval of 150 ms.

A log was kept of participants' response time (in milliseconds), whether the response was correct or incorrect and the details of the stimulus (word/pseudoword, frequency set, identifier). After each block, participants were given the opportunity to have a short self-paced break before proceeding to the next block. The length of this break was also timed, although participants were not informed about this. Participants were not given feedback about their overall accuracy or reaction time at any stage of the LDT, apart from immediate feedback in the case of an incorrect categorisation.

After completing the LDT, participants responded to five self-report questions using an on-screen visual analogue scale (scored from 0–100). Participants were asked to rate their perceived difficulty of the LDT (*extremely easy, extremely difficult*), their perceived speed during the task relative to other participants (*much slower, much faster*), whether they thought they made more or fewer mistakes compared with other participants (*significantly fewer, significantly more*), whether they felt overwhelmed, paralysed or stuck categorising between words and non-words during the task (*not at all, all of the time*) and how tiring/fatiguing they felt the task to be (*not at all, extremely*).

Charity Decision-making Task. The Charity Decision-making Task (CDT) required participants to explore descriptions of various Australian charities with the aim of choosing one to which to make a $2 donation.

The informational stimuli were textual descriptions of registered Australian charities. The charities were not identified by name so as to minimise choices based predominantly on the recognition heuristic rather than an evaluation of the description. In order to operationalise the similarity manipulation in the study, two sets of charities were compiled: charities relating only to child or youth health (the *high similarity* condition) and a collection of charities with dissimilar subject matters (e.g., the environment, animal rights, international development and indigenous education: the *low similarity* condition). These charities were identified through online research. The aims of the charity and a description of the charity's activities were written based on publicly-available information (e.g., from the charity's website and annual reports). Charities with a predominantly political or religious purpose were not considered.

A preliminary set of descriptions for 27 child/youth health charities and 27 miscellaneous charities were presented to a pilot sample of 13 participants from the same population as the study participants. Charities which were easily identifiable or those which were too popular or unpopular were excluded and replaced. A final list of 54 charities (27 high similarity, 27 low similarity) was prepared based on this feedback. The aims and activities for each charity were then edited in order to match the word length and writing style as much as possible. The median length of the aims was 30 words ($M = 29.704$, $SD = .915$) while the description was longer, with a median length of 102 words ($M = 101.704$, $SD = 1.196$). There were no significant differences between the word length for the aims or description between the two similarity categories ($t(52) = .882$, $p = .382$, *ns*; $t(52) = .447$, $p = .656$, *ns*, respectively).

In the CDT, participants were shown these descriptions of charities as a "card" on screen, one at a time. An example of an information card for a children's charity as seen by the participant is shown in Figure 5.1.

Category

Children/Young People

Objectives

This organisation helps Australian children who are sick, disadvantaged or have special needs to gain mobility and communication, to fulfil their academic potential and to receive the medical treatment they require.

Activities

Provides funding for mobility equipment, wheelchairs and transportation so that children with special needs gain a sense of freedom, independence and the chance to join in with other kids in the community.

Provides children with special needs access to computers and technology to positively transform not only their academic performance but also their classroom experience.

Supports children's health services including children's hospital neo-natal wards, providing critical equipment such as humidi-cribs, ventilators, cochlear implants, myo-electric limbs and specialised computer software.

Plans and coordinates events and activities for groups of disadvantaged or special needs children, allowing them to have wonderful and uplifting experiences.

Figure 5.1. Example of an information card for a charity in the CDT.

Figure 5.2 is a screenshot showing the user interface of the CDT. Underneath the information for each charity, participants had four options, presented as buttons:

1. *Next* – move to the next card in the choice set, without adding/excluding the currently shown item (available if choice set size > 1);
2. *New* – draw, and display, a card for a previously unseen charity, and add it to the choice set (available if unseen cards > 0);
3. *Exclude* – permanently exclude the displayed card from the choice set, and move to the next card in the current choice set (available if choice set size > 1); and
4. *Donate* – make the $2 donation to the selected charity, and thus end the task. On clicking this button, a dialogue box appeared asking the participant to confirm the choice.

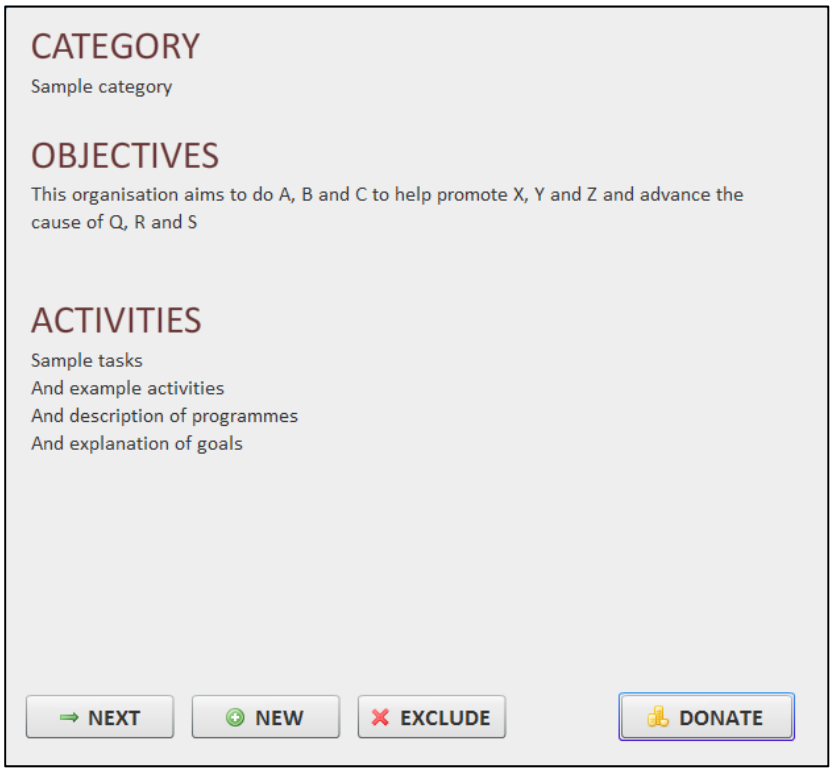


Figure 5.2. User interface for the CDT.

Instructions about the task and on navigating the interface were presented to participants before the task. Participants were also given different instructions about the objective of the task depending on their random allocation into a self-focus condition (see Appendix 5.2). In the *high self-focus* condition, participants were reminded that they were making a donation with real money and to exercise decision-making role responsibly. Participants were told that their decision-making strategy would be monitored and their donation would not be made to their selected charity if they did not meet the criteria for "a good decision" (which was not defined). In the *low self-focus*

condition, participants were merely told to explore the information available and to choose a preferred charity when they were ready.

Participants began the CDT with one randomly selected charity card presented and three other charities in their choice set. This left 23 as-yet unseen additional charities which could be added to the choice set. Participants were not informed about the number of charities which were not yet seen, excluded or currently in their active choice set, except indirectly if the "Add" or "Exclude" buttons became greyed-out and inactive. The experiment software kept a timestamped log of events, from which dynamic data about choice set, decision time and search strategy could be derived.

After the participant had chosen a charity to which to donate and confirmed their selection, they were asked a number of self-report questions presented on visual analogue scales, similar to the post-LDT questions. Participants were asked about the difficulty of choosing a charity, whether they experienced or indecision or "stuckness" choosing between charities, how similar the charities were to each other (a manipulation check), whether they would now choose a different charity to the one they had selected in the task, and how self-conscious they felt while making their choice (a further manipulation check), and how tiring or fatiguing they found the task. On the final screen of the CDT, participants were asked to explain briefly their reason(s) for choosing their selected charity in an open-ended multiple line text box.

Results

Multidimensionality of Indecisiveness

To examine the stability of the three dimensions of indecisiveness identified in Study 1, the composite IS-R and PFIS were subject to the same factor analysis procedure. A three-factor Varimax rotated solution was obtained as expected. The items on each factor largely corresponded with the results obtained in the previous study, confirming the stability of the results obtained in Study 1. The table of item-factor loadings is contained in Appendix 5.3.

The main difference was that more rumination-related items loaded directly onto the third factor, whereas in the first study these items were split between the aversive and avoidant factors. Nonetheless, the previous interpretation of the factors as relating to aversive indecisiveness ($\lambda = 3.837$, variance explained = 15.348%), avoidant indecisiveness ($\lambda = 3.499$, variance explained = 13.998%) and ruminative

indecisiveness (λ = 3.004, variance explained = 12.014%), could be maintained and applied to the current study.

Orthogonal and standardised factor scores were derived for the purpose of further analyses. Since the hypotheses did not make any specific predictions in relation to ruminative indecisiveness, which had previously behaved like an attenuated form of aversive indecisiveness, this dimension of indecisiveness was omitted in subsequent analyses.

Indecisiveness and Process Data

Standardised *z*-scores were calculated for participants' mean response times on each of the 25 IS-R and PFIS questions. These values were entered as repeated variables in a generalised linear mixed model (GLMM), with participants at the subject level and each personality item as a repeated measure. Aversive and avoidant indecisiveness were included as covariates along with native English speaker status to account for any systemic differences in reading time. Avoidant indecisiveness was associated with shorter response times to the indecisiveness items (B = -.042, SE = .015; $t(2545) = -2.702$, $p = .007$, $CI_{.95}$ = [-.072, -.011], using a gamma distribution with log link), supporting the hypotheses. There was no significant effect of aversive indecisiveness on response time (B = -.013, SE = .018; $t(2545) = -.763$, $p = .445$, $CI_{.95}$ = [-.045, .020], *ns*).

The total number of response selections across the IS-R and PFIS scales (i.e., the number of times any scale option was clicked) was also examined. Apart from native English speakers showing slightly more response variability (B = .068, SE = .015; $t(2598) = 4.50$, $p < .001$, $CI_{.95}$ = [.039, .097]), there were no effects for the two indecisiveness dimensions on a similar mixed-model analysis, modelled using a Poisson distribution with log link (all $|t|$s < 1.1, ps > .25) and using a Pearson chi-square scale parameter to account for overdispersion.

Finally, linear mouse distance data were calculated from the Cartesian mouse position coordinates which were recorded at 250 ms intervals. Controlling for the number of selections (for which a significant effect was observed: B = .396, SE = .015; $t(2597) = 26.401$, $p < .001$, $CI_{.95}$ = [.037, .425]), there was a main effect for avoidant indecisiveness. Increasing avoidant indecisiveness was associated with decreased mouse movement before selection (B = -.013, SE = .006, $t(2597) = -2.315$, $p = .021$, $CI_{.95}$ = [-.024, -.002]), consistent with hypotheses.

Affective State and Change

Pre-study and post-study scores on the Positive Affect (PA) and Negative Affect (NA) dimensions of the I-PANAS-SF were examined independently and also as change scores. There were no effects of task order for either subscale (all *p*s > .1).

Regressed against the two indecisiveness variables, absolute pre-task PA was negatively related to avoidant indecisiveness (B = -1.245, SE = .321, $p < .001$). On the other hand, absolute pre-task NA was uniquely predicted by higher levels of aversive indecisiveness (B = .930, SE = .291, p = .002).

Absolute post-task PA was inversely predicted by both aversive indecisiveness (B = -1.070, SE = .388, p = .007) and avoidant indecisiveness (B = -1.003, SE = .388, p = .011). However, only aversive indecisiveness was a significant predictor of I-PANAS-SF change scores. Higher aversive indecisiveness was reflected in lower levels of both NA (B = -.398, SE = .146, p = .008) and PA (B = -.905, SE = .264, p = .001) by the end of the study.

Indecisiveness and Tonic HF-HRV

Aversive and avoidant indecisiveness were entered in a regression model as predictors of log-transformed tonic HF-HRV (model R^2_{adj} = .046; $F(2, 98) = 3.402$, p = .037). Only aversive indecisiveness predicted lower levels of tonic HF-HRV (β = -.231, $t(98) = -2.425$, p = .017). By contrast, avoidant indecisiveness had no relationship with tonic HF-HRV (β = .096, $t(98) = .988$, p = .326). These findings support the hypothesis that only aversive indecisiveness would be associated with lower baseline levels of self-regulatory capacity and flexibility.

LDT and CDT: Task Perceptions

One assumption of the study design was that the LDT and CDT would be appraised as two different kinds of decision-making tasks. Participants' responses on the post-task VAS measures showed that the tasks were experienced differently in terms of difficulty and fatigue, as shown in Table 5.1.

Across all task orders and CDT conditions, the CDT was felt to be more difficult than the LDT ($t(101) = 4.152$, $p < .001$, d = .411, $CI_{.95}$ = [6.088, 17.226]), but the LDT was more fatiguing than the CDT ($t(101) = -5.577$, $p < .001$, d = .550, $CI_{.95}$ = [-18.742, -8.908]).

The two tasks did not differ on overall experienced aversive indecision ($t(101) = 1.151$, $p = .252$, *ns*, $d = .113$, $CI_{95} = [-2.556, 9.924]$). Mean recalled and reported indecision on both tasks was less than the midpoint of the VAS scale (scored between 0 and 100) indicating that the tasks did not elicit a high level of consciously aversive indecision.

Table 5.1

Self-Reported Perceptions of the LDT and CDT

Self-report item	LDT	CDT	Mean Difference	*p*
Difficulty	49.910	61.570	11.657	<.001
	(16.272)	(21.787)	(28.353)	
Fatigue	54.630	40.810	-13.825	<.001
	(19.355)	(22.888)	(25.158)	
Indecision	42.870	46.410	3.534	.252
	(20.895)	(23.815)	(31.158)	

Note. Standard deviations are indicated in parentheses.

LDT: Self-regulatory Mode

To address the preliminary hypothesis that LDT taxed self-regulatory capacity, two parallel processes need to be disentangled. The first process is the exertion-based self-regulatory depletion which is due to the order of the LDT within the study. The other process is the effect of aversive and avoidant indecisiveness on both baseline self-regulatory capacity and its depletion.

Univariate analyses were conducted to examine the relationship between the task order and indecisiveness on the standardised log-transformed phasic HF-HRV index during the LDT. Lower levels of HF-HRV, as discussed before, indicate a threat-oriented stress response to the task, while higher levels indicate challenge-oriented adaptive deployment of self-regulatory resources in response to the decision-making situation.

The first model included only task order, aversive and avoidant indecisiveness, and interaction terms between task order and each form of indecisiveness as predictors (model $R^2_{adj} = .078$). Task order was a significant predictor, with lower HF-HRV if the LDT was completed first rather than last ($F(1, 95) = 7.396$, $p = .008$, $\eta_p^2 = .072$; *B*

= -.520, *SE* = .191). Inspection of estimated marginal means (EMMs) showed that phasic HF-HRV was significantly different across the two conditions (mean difference = -.517, *SE* = .191, *p* = .008, $CI_{.95}$ = [-.897, -.138]). Moreover, the means had opposing valences, indicative of HRV suppression where the LDT was first and HRV enhancement where the LDT was last. However, the estimated means themselves were not significantly different from zero ($M_{\text{LDT first}}$ = -.258, *SE* = .135, $CI_{.95}$ = [-.525, .009]; $M_{\text{CDT first}}$ = .259, *SE* = .136, $CI_{.95}$ = [-.010, .529]).

Higher levels of aversive indecisiveness also predicted phasic HF-HRV suppression independent of task order ($F(1, 95) = 4.330$, $p = .040$, $\eta_p^2 = .040$; *B* = -.275; *SE* = .138), in line with hypotheses. Avoidant indecisiveness was not a significant predictor, nor were any of the interaction terms significant. This restricted model, however, only examined absolute phasic HF-HRV. Since aversive indecisiveness was previously found to predict lower levels of tonic HF-HRV, an analysis was run with a full model which also accounted for standardised baseline HF-HRV (model R^2_{adj} = .646).

In this model, only task order remained a significant predictor ($F(1, 90) = 7.494$, $p = .007$, $\eta_p^2 = .077$), in addition to the expected large effect of tonic HF-HRV on phasic HF-HRV ($F(1, 90) = 152.334$, $p < .001$, $\eta_p^2 = .629$). Aversive indecisiveness was no longer a significant predictor; nor were any of the interaction terms significant. This suggests that the suppressing effect of aversive indecisiveness is due to lower baseline levels of HF-HRV, reflective of lower self-regulatory capacity or flexibility, rather than phasic changes in HF-HRV.

Within this full model, the EMMs for HF-HRV were significantly different from each other (mean difference = -.342, *SE* = 125, *p* = .007, $CI_{.95}$ = [-.590, -.095]). After accounting for tonic HF-HRV, each estimated mean was also significantly different from zero in an approximately symmetric way. There was therefore a statistically significant pattern of HRV suppression where the LDT was completed first (*M* = -.164, *SE* = .085, $CI_{.95}$ = [-.326, -.001]), and HRV enhancement where the LDT was completed last (*M* = .178, *SE* = .090, $CI_{.95}$ = [.006, .350]).

There was therefore only partial support for the hypothesis that the LDT would be stressful or depleting. The results instead show that the same task may have opposite effects on HF-HRV due to the order in which task is completed, independent of indecisiveness. There was no relationship between self-reported fatigue and the degree of change in HRV from baseline (*r* = -.010, *p* = .919).

LDT: Descriptive Statistics

Descriptive statistics for LDT response times (RTs) are shown in Table 5.2. While the table decomposes the RTs into those for words and pseudowords, this distinction was not used in the following analyses. RTs of less than 350 ms were excluded as outliers on a per-observation basis (Ratcliff, Gomez, & McKoon, 2004; Ratcliff & McKoon, 2008). Such responses usually were the result of accidental or premature action on the input device before the stimulus had been processed. Unlike most other LDT studies, however, the upper RT limit was set at 6,000 ms rather than 2,000 ms or 3,000 ms. A longer time was considered appropriate given that decisional latency is a key behavioural expression of indecision. Out of 62,400 total observations, 221 data points (0.4%) were excluded, leaving a working set of 62,179 observations. The proportion of excluded responses is in line with the amount of excluded data in the studies conducted by Ratcliff, Gomez, & McKoon (2004), despite the wider range of acceptable RTs here.

Table 5.2

LDT Response Time and Accuracy

	Across all observations (*n* = 62,179)		**Across all participants (*n* = 104)**	
	M	*SD*	*M*	*SD*
Response time (ms)				
Words	780.710 [a]	370.731	781.222 [c]	173.897
Pseudowords	863.950 [a]	417.370	865.264 [c]	221.436
Overall	822.300	396.906	823.169	195.626
Accuracy (Π(*correct*))				
Words	.880 [b]	.330	.875 [d]	.069
Pseudowords	.910 [b]	.289	.908 [d]	.084
Overall	.890	.311	.892	.065

Note. Pairs of means in the same column sharing the same letter subscript are significantly different ($p < .01$).

Across all observations, there was an expected difference in response time and accuracy between native and non-native English speakers. Non-native speakers were on average 117 ms slower per response (M = 907.810 ms, SD = 467.232) than native English speakers (M = 790.840 ms, SD = 362.628; $t(62177) = 32.869$, $p < .001$, CI_{95} = [110.000, 123.950], $d = .280$) across all stimulus types. Non-native English speakers were also significantly less accurate (82.8% vs. 91.5% correct; $\chi^2(1) = 968.213$, $p < .001$, $\Phi = .125$). The following analyses therefore accounted for native English speaker status.

LDT: Indecisiveness, Self-regulatory Mode and Task Behaviour

Having shown that there was a bidirectional independent effect of the manipulation of task order on self-regulatory status, the next set of hypotheses about LDT can be examined with appropriate revisions. These hypotheses relate to how indecisiveness, together with appraisals of stress and capacity within the immediate decision-making activity, combine to activate indecision processes and behaviour. The analyses, however, are modified to account for both HRV suppression and enhancement from baseline, which are interpreted as indicators of a threat/defensive appraisal or a challenge/adaptive exertion appraisal, respectively.

A series of three GLMMs were run, using data across the 20 blocks of the LDT as the repeated measure for each participant. The dependent variables were (i) the mean RT over the block (in milliseconds, modelled as a gamma distribution with a log link), (ii) errors (the number of incorrect responses in each block, modelled as a negative binomial distribution with log link), and (iii) the duration of the self-paced break which participants took between blocks (also measured in milliseconds using a gamma distribution with log link). The continuous predictors were the standardised factor scores for aversive and avoidant indecisiveness and the HF-HRV change score (ΔHF-HRV), which was the difference between standardised log-transformed HF-HRV measures during the LDT and at baseline. The model included main effects for all variables and two-way interaction effects between ΔHF-HRV and the two indecisiveness variables, and also accounted for native English language status and task order. Table 5.3 shows a summary of the parameter estimates from these analyses.

Figures 5.3 to 5.5 plots these models for each dimension of indecisiveness, using values of -1, 0 and +1 standard deviation (z-score) units of the standardised indecisiveness score along the x-axis. Three separate lines are plotted for ΔHF-HRV,

also at -1, 0 and +1 standard deviation units. For convenience, these may be regarded as representing HRV suppression and threat/defensive stress (z = -1), no HRV change and a neutral appraisal (z = 0), and HRV enhancement and challenge/adaptive exertion (z = 1). The plots show values for native English speakers, with marginal means on the y-axis in their original scale (i.e., milliseconds or number of errors).

Table 5.3

Parameter Estimates for Indecisiveness and Self-Regulatory Mode on LDT Behaviour

	Response Time		**Errors (incorrect trials)**		**Inter-block Break Time**	
	B	***SE***	***B***	***SE***	***B***	***SE***
Intercept	6.707 ***	.009	.893 ***	.024	8.345 ***	.035
Task order (LDT first)	-.039 **	.012	.118 ***	.030	-.185 ***	.047
ΔHF-HRV	.020 *	.010	.008	.024	-.130 ***	.038
Native English	-.120 ***	.015	-.665 ***	.033	.219 ***	.057
Indecisiveness						
Aversive	.017 **	.006	.082 ***	.016	-.025	.024
Avoidant	-.017 **	.006	-.083 ***	.016	.128 ***	.025
Δ*HF-HRV* ×						
Aversive	-.025 *	.010	-.154 ***	.026	-.176 ***	.038
Avoidant	.015	.011	.106 ***	.026	.012	.040

Note. * $p < .05$; ** $p < .01$; *** $p < .001$.

As hypothesised, higher levels of aversive indecisiveness predicted longer RTs (B =.017, SE = .006, $t(89) = 2.723$, p = .007, CI_{95} = [.005, .030]) but more errors (B =.082, SE = .016, $t(89) = 5.229$, $p < .001$, CI_{95} = [.051, .113]) at the main effects level (see Table 5.2). Significant opposite-valenced coefficients were observed in the interaction between aversive indecisiveness and self-regulatory mode. With greater HF-HRV suppression (i.e., threat appraisal), aversive indecisiveness predicted greater latency (B = -.025, SE = .010, $t(89) = -2.518$, p = .012, CI_{95} = [-.044, -.006], noting that HRV suppression has a negative coefficient, producing a double negative), more mistakes (B = -.083, SE = .016, $t(89) = 5.229$, $p < .001$, CI_{95} = [.051, .113], and longer

gaps between blocks (B = -.176, SE = .038, t(89) = -4.615, p < .001, $CI_{.95}$ = [-.251, -.101]). On the other hand, increasing HF-HRV control (i.e., indicative of neutral or adaptive challenge appraisals of the LDT) attenuated or reversed this deleterious effect on performance, as shown in Figures 5.3 to 5.5.

Avoidant indecisiveness was a significant predictor at the main effects level for all three variables and in the opposite direction to aversive indecisiveness, as hypothesised. Avoidant indecisiveness was associated with faster RTs (B = -.017, SE = .006, t(89) = -2.615, p = .009, $CI_{.95}$ = [-.029, -.004]), with no significant interactive effect together with ΔHF-HRV. Avoidant indecisiveness was also associated with fewer errors (B = -.083, SE = .016, t(89) = -5.364, p < .001, $CI_{.95}$ = [-.114, -.053]), especially under higher levels of threat-oriented stress (B =.106, SE = .026, t(89) = 4.125, p < .001, $CI_{.95}$ = [.056, .156]).

Like aversive indecisiveness, avoidant indecisiveness was associated with longer inter-block breaks, although this effect was independent of self-regulatory mode (B =.128, SE = .025, t(89) = 5.150, p < .001, $CI_{.95}$ = [.079, .176]).

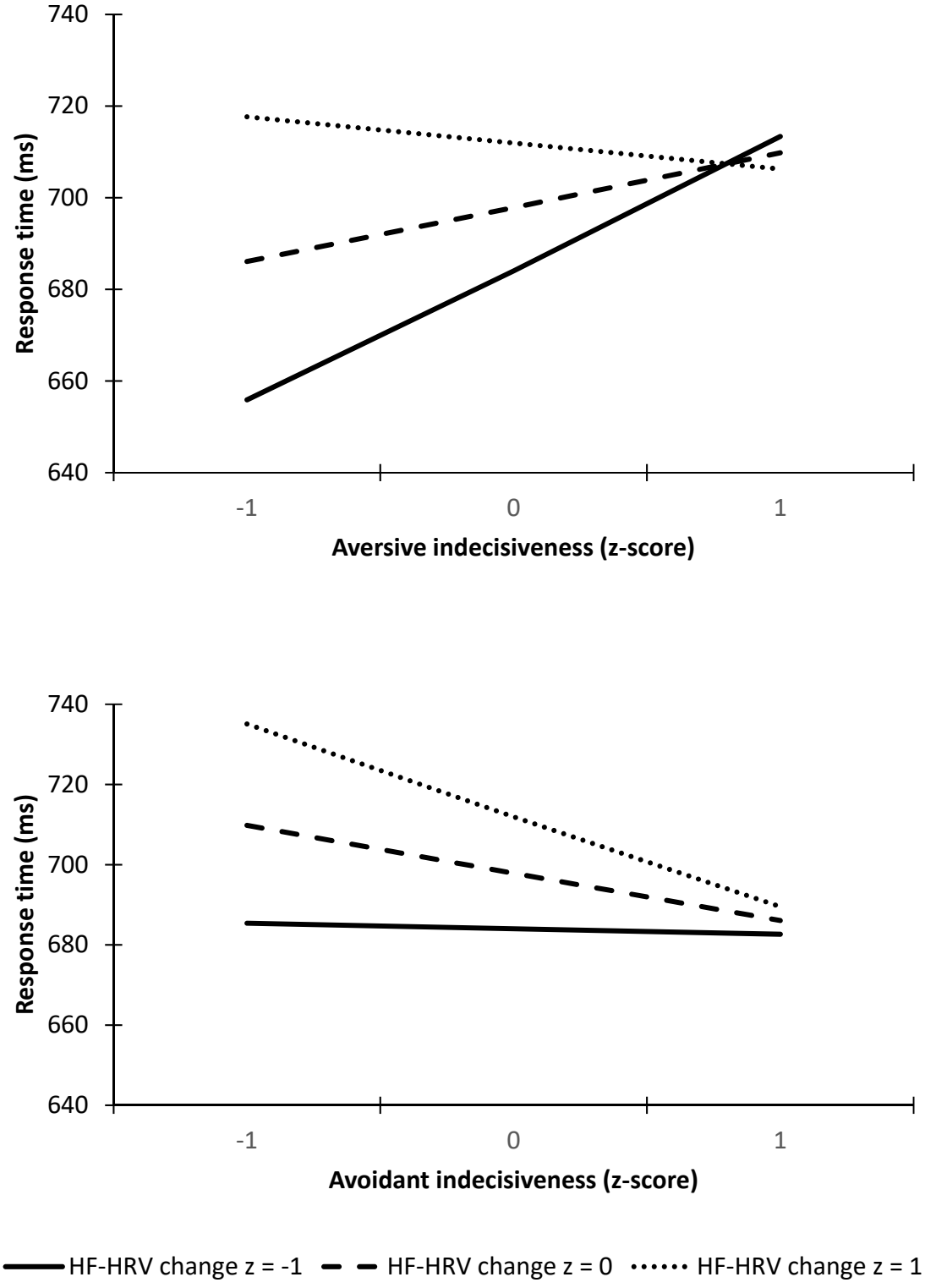


Figure 5.3. LDT mean response times plotted at different levels of aversive and avoidant indecisiveness and HF-HRV change.

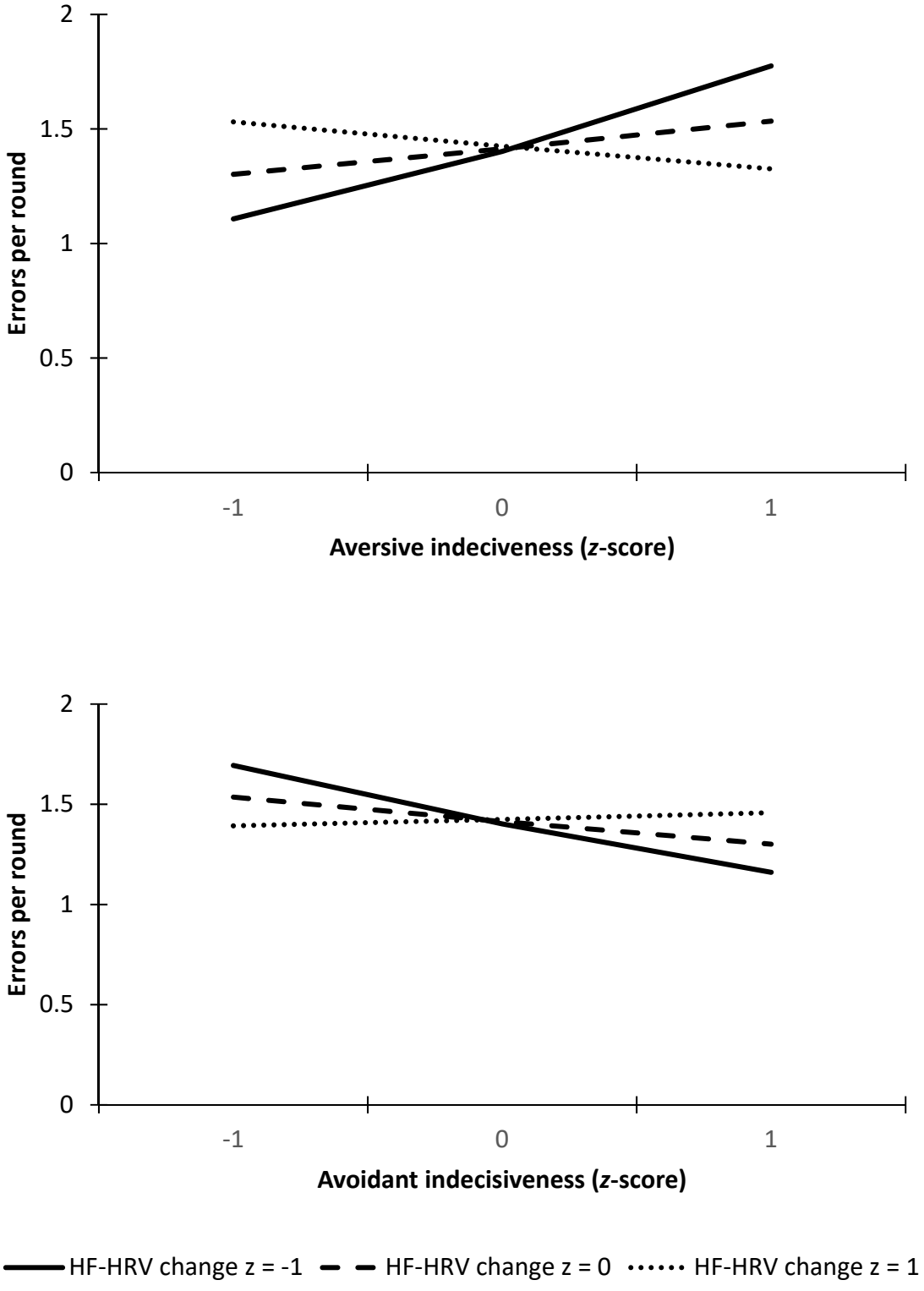


Figure 5.4. LDT mean number of errors per round plotted at different levels of aversive and avoidant indecisiveness and HF-HRV change.

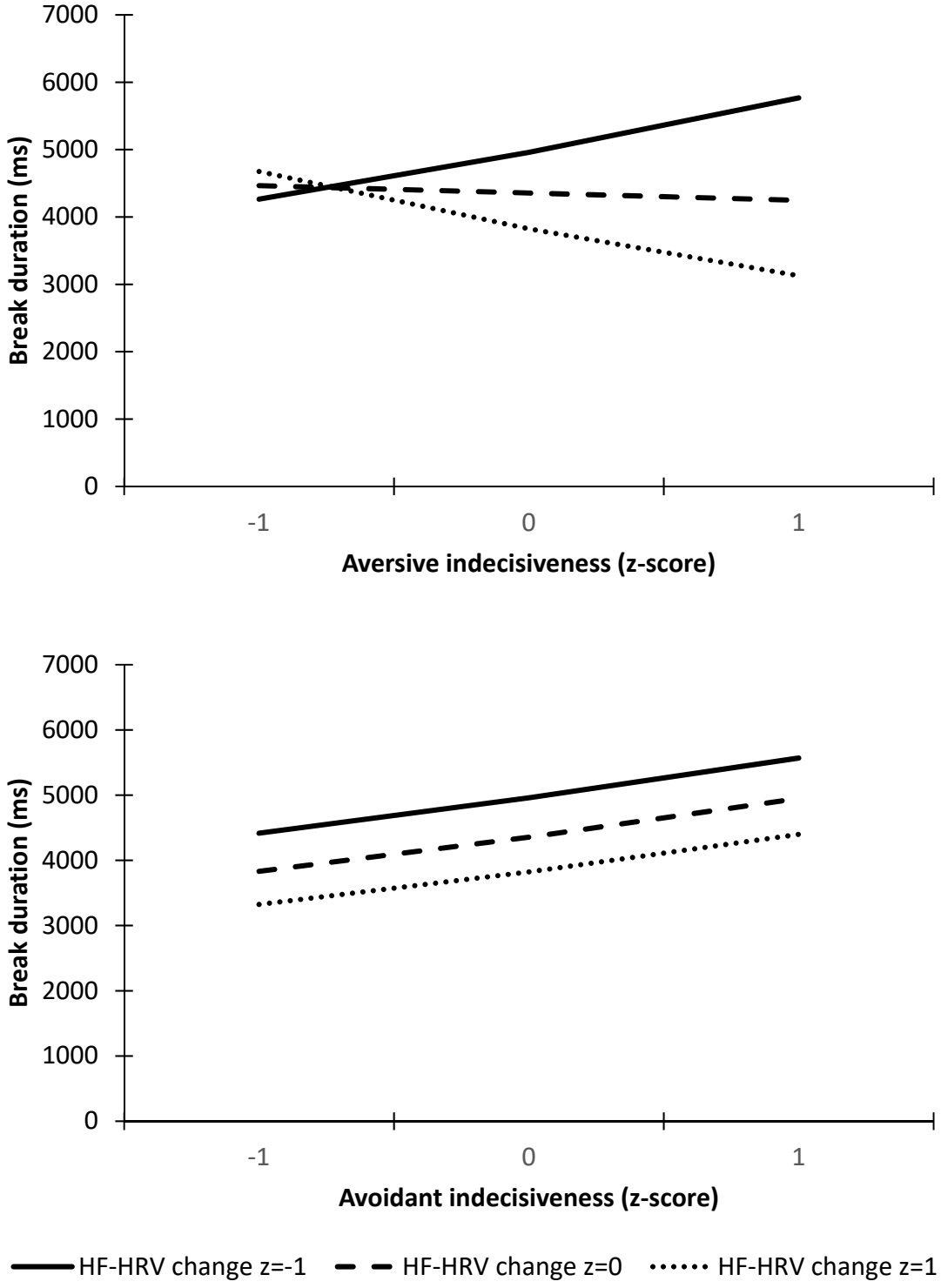


Figure 5.5. LDT mean inter-round break time plotted at different levels of aversive and avoidant indecisiveness and HF-HRV change.

LDT: Indecisiveness, Self-Regulatory Mode and Self-Report

To test the hypotheses about the relationships between indecisiveness and self-regulatory mode on self-reported experiences of the LDT, responses to the five post-task self-report questions were analysed using separate univariate analyses using the same variables and model as for the analyses reported above. Supporting the hypotheses, aversive indecisiveness was a predictor for four of the five measures while avoidant indecisiveness was not a significant predictor for any of the items (see Table 5.4).

As expected, aversive indecisiveness was associated with higher levels of recalled and reported aversive indecision (B = 5.712, SE = 2.044, p = .006, CI_{95} = [1.654, 9.771]). It also predicted higher levels of conscious fatigue (B = 5.183, SE = 1.891, p = .007, CI_{95} = [1.428, 8.937]) although this was attenuated with increasing HRV control (B = -11.410, SE = 5.679, p = .047, CI_{95} = [-22.686, -.134]). Higher levels of aversive indecisiveness were also associated with slower self-perceived reaction times as compared with imagined other participants (B = -3.288, SE = 1.399, p = .021, CI_{95} = [-6.065, -.510]). However, contrary to expectations, aversive indecisiveness was associated with perceptions that they were more accurate than others (B = 3.004, SE = 1.249, p = .018, CI_{95} = [.523, 5.485]).

Apart from native English status, which was a significant predictor across all self-report variables except for fatigue, there were no significant predictors of perceived difficulty of the LDT. There were also no main effects of ΔHF-HRV, supporting the hypothesis that self-regulatory processes remain largely outside conscious awareness.

CDT: Descriptive Statistics

Given the discretionary nature of the CDT, there was considerable variation in the information search and time course adopted by participants as they chose a charity. Table 5.4 provides a summary of the primary behavioural measures of the CDT across all conditions. One participant was excluded from analyses because no meaningful information search was observed, most likely due to a failure to comprehend task instructions. Most of the variables were positively skewed, with a long tail towards longer processing time or information search.

Table 5.4

*Descriptive Statistics for CDT Behavioural Measures (*n = *103)*

	M	Median	*SD*	Range	Skewness [a]	Kurtosis [b]
Time to decision (s)	403.762	309.900	315.363	49.100 – 1629.490	1.731	3.653
Total charities seen	46.640	42.000	32.098	3 –167	.653	.270
Unique charities seen	17.930	20.000	9.482	3 – 27	-.307	-1.642
Charities excluded	9.030	5.000	9.424	0 – 26	.719	-1.016
Confirmatory time ratio [c]	7.867	4.742	9.535	.18 – 54.48	2.635	7.842
Confirmatory events ratio [d]	.141	.092	.109	.03 – .50	1.384	1.027

Note. [a] *SE* = .238; [b] *SE* = .472; [c] Ratio of time spent on eventually-chosen charity to mean per-item time on non-chosen charities; [d] Ratio of number of times eventually-chosen charity was seen to number of times non-chosen charities were seen.

CDT: Effect of Belief in a Just World and Political Ideology

A series of GZLMs were run to test whether participants' socio-political attitudes and beliefs affected their behaviour on the CDT, in terms of time, information seeking, self-reported indecision and self-reported task difficulty. The total GBJWS score and the political orientation VAS measure were entered as continuous predictors, together with the two experimental IVs as fixed factors. Both GBJWS and political orientation were not significant predictors across all variables (all $\chi^2(1) < 1$, ps > .2). As such, these variables were excluded from subsequent analyses.

CDT: Manipulation Checks and Task Order Effect

To assess whether the manipulations of similarity and self-focus had their intended effect, univariate linear analyses were run with the corresponding self-report questions as the target variable. Participants did perceive the two charity sets to be different in similarity, as had been intended ($F(1, 98) = 20.062$, $p < .001$, $\eta_p^2 = .229$; model $R^2_{adj} = .223$). The high-similarity set of charities was perceived as more similar ($M = 59.968$, $SE = 2.507$, $CI_{.95} = [54.993, 64.944]$) than the low-similarity set ($M = 40.871$, $SE = 2.483$, $CI_{.95} = [35.944, 45.799]$ and the difference was significant (mean difference = 19.097, $SE = 3.543$, $p < .001$, $CI_{.95} = [12.067, 26.127]$). The

manipulation of similarity was also hypothesised to make the task more difficult. However, the two conditions did not differ in their effect on self-reported difficulty ($F(1, 98) = 1.129$, $p = .291$, $\eta_p^2 = .011$; model $R^2_{adj} = .014$). As discussed further below, however, the similarity manipulation did affect experienced indecision ($F(1, 98) = 5.085$, $p = .026$, $\eta_p^2 = .049$; model $R^2_{adj} = .110$) and task behaviour.

Contrary to intentions, the self-focus manipulation had no effect on participants' reported levels of self-consciousness ($F(1, 98) = .961$, $p = .329$, $\eta_p^2 = .010$, model $R^2_{adj} = .003$). However, this factor also predicted greater reported indecision ($F(1, 98) = 4.674$, $p = .033$, $\eta_p^2 = .046$) and other differences in behaviour, as will be discussed below. There was also no statistically significant effect of task order (i.e., CDT first or LDT first) on any of the self-reported experience items or behavioural measures (all ts < 1.5, all ps > .140, *ns*).

CDT: Persistence of HF-HRV Change from the LDT

Another preliminary hypothesis is that the depleting effect of the LDT on self-regulatory capacity would carry through to the CDT (Segerstrom & Nes, 2007; Smith et al., 2011). That is, it would be expected that the HF-HRV index of participants in the LDT-first condition should be lower than that of participants in the CDT-first condition. An independent samples *t*-test showed that neither standardised absolute HF-HRV nor ΔHF-HRV scores were significantly different across the two task orders ($t(99) = .547$, $p = .586$, $CI_{95} = [-.287, .505]$, $d = .001$; $t(99) = 1.145$, $p = .255$, $CI_{95} = [-.104, .387]$, $d = .228$, respectively). As such, the null hypothesis here could not be rejected with the data showing that participants in the CDT in a state of greater depletion if they had previously completed the LDT.

Setting aside task order, a similar analysis to the one previously run in relation to the LDT was conducted to examine whether the experimental manipulations, the two indecisiveness factors and their interactions would have an effect on phasic HF-HRV in the CDT. The model also accounted for age and native English status (model $R^2_{adj} = .057$). As in the LDT, only aversive indecisiveness predicted lower absolute phasic HF-HRV ($F(1, 86) = 9.131$, $p = .003$, $\eta_p^2 = .096$). However, like in the LDT, this effect was no longer significant once controlling for (lower) tonic HF-HRV in the full model ($F(1, 86) = 2.345$, $p = .129$, $\eta_p^2 = .027$). There was therefore no systemic effect of the experimental manipulations or of indecisiveness on HF-HRV during the CDT, as well

as no psychophysiological evidence that the CDT was experienced as either threatening or positively challenging, contrary to hypotheses.

CDT: Behavioural Measures

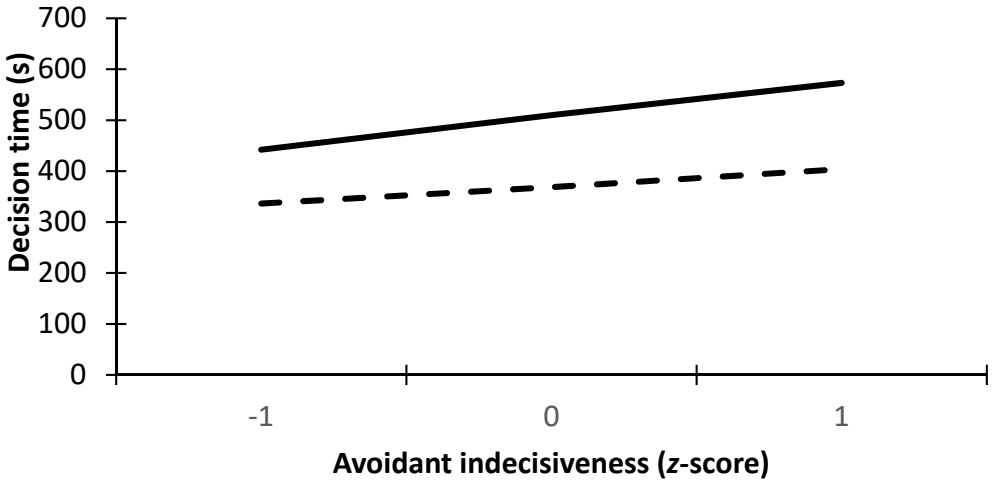
Turning to participants' behaviour on the CDT, the relevant hypotheses here were tested using a series of GZLMs. The model for each dependent variable included the two experimental IVs (similarity and self-focus) as fixed factors, aversive and avoidant indecisiveness, native English status, and standardised ΔHF-HRV (CDT to baseline). Two- and three-way interactions between the IVs and indecisiveness covariates were also included. A gamma distribution with log link was used to model decision time, which was negatively skewed. A loglinear Poisson model was used for count-based measures (e.g., items seen). To adjust for overdispersed count data, the Pearson chi-square scale parameter was used, yielding more conservative variance estimates and significance levels. Appendix 5.4 shows the model effects for each of the measures.

Total decision time. Neither the manipulation of similarity ($\chi^2(1) = .104$, $p = .747$) nor self-focus ($\chi^2(1) = .001$, $p = .973$) independently predicted decision time. However, as hypothesised, there was a main effect of aversive indecisiveness ($\chi^2(1) = 4.612$, $p = .032$), weakly predicting a longer time to decision on the CDT.

As seen in Appendix 5.5, there was no main effect of avoidant indecisiveness, as had been expected ($\chi^2(1) = .014$, $p = .905$). Instead, a weak interaction was observed between avoidant indecisiveness and the self-focus manipulation ($\chi^2(1) = 3.898$, $p = .048$). Plots of the factor-by-covariate interaction showed that in the low self-focus condition, increasing levels of avoidant indecisiveness weakly predicted increased decision time. Under high self-focus, however, increasing avoidant indecisiveness predicted decreased decision time where the alternatives were dissimilar, but had little effect when the alternatives were similar (Figure 5.6).

There was also a significant interaction between the two experimental IVs ($\chi^2(1) = 7.435$, $p = .006$). As seen in Table 5.5, the time to decision was observed to be higher not only in the high similarity/high self-focus condition, but also in the low similarity/low self-focus condition when compared with the high similarity/low self-focus or low similarity/high self-focus conditions. However, these pairwise differences were not statistically significant once Bonferroni-corrected.

Low Self-Focus Condition



High Self-Focus Condition

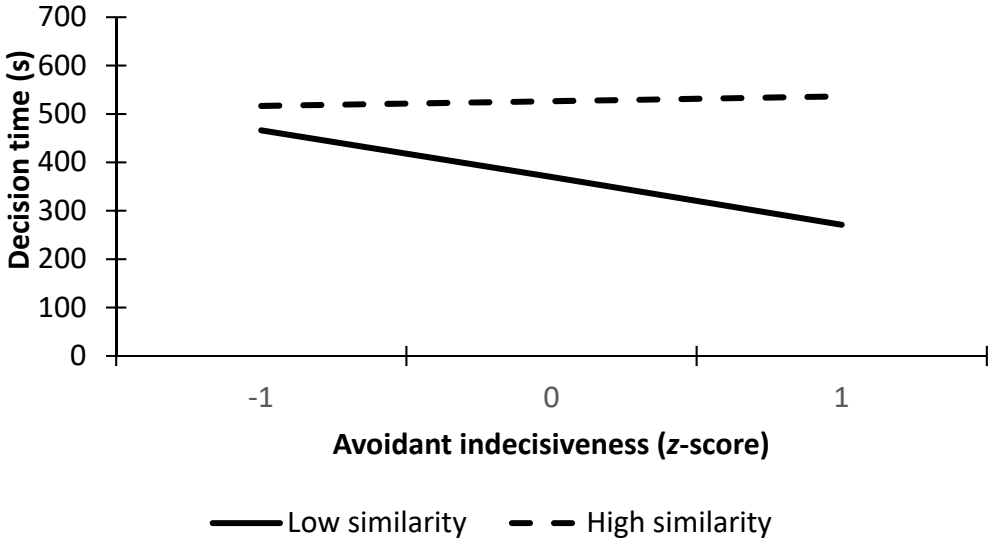


Figure 5.6. Total decision time under self-focus and similarity conditions by avoidant indecisiveness.

Table 5.5

EMMs for CDT Time to Decision (in seconds) Across Experimental Conditions

	Low Similarity		**High Similarity**	
	M	*SE*	*M*	*SE*
Low Self-Focus	435.493	54.008	319.503	41.792
High Self-Focus	308.580	37.325	457.699	59.712

Total charities seen. By contrast, the only predictor of the total number of charities seen by the participant (counting repeated presentations) was the factor-by-factor interaction ($\chi^2(1) = 3.932$, $p = .047$), albeit with a weak effect. Once again, an examination of the EMMs showed that more items were seen where similarity and self-focus were in the same direction (high/high: $M = 48.66$, $SE = 6.533$; low/low: $M = 55.50$, $SE = 7.011$), but fewer were seen when the two experimental conditions were mismatched (high/low: $M = 40.02$, $SE = 6.001$; low/high: $M = 38.71$, $SE = 5.604$). This difference was also not significant after adjusting for multiple comparisons (all ps > .05).

Unique charities seen. As participants were free to sample from a number of unseen charities, the number of unique charities seen was also examined as a measure of novel information seeking. Once more, the only significant effect was the interaction between the two experimental factors ($\chi^2(1) = 4.133$, $p = .042$) with the same pattern of results previously observed for total time and total charities seen.

Excluded charities. The number of charities which were permanently excluded from consideration by participants was considered as an indicator of active control over the decision-making activity. Fewer exclusions were expected with increasing avoidant and aversive indecisiveness. After controlling for the total number of charities seen, the hypothesis was not supported at the main effects level. There was a significant three-way interaction between aversive indecisiveness and the manipulations of self-focus and similarity ($\chi^2(1) = 4.541$, $p = .033$). Increasing aversive indecisiveness was associated with fewer exclusions in the low-similarity/low self-focus condition and the high-similarity/high self-focus conditions, but was positively predictive of exclusions in the other (similarity and self-focus incongruent) conditions.

Confirmation bias. Two measures of confirmation bias were also calculated from the process data. One was a time-based measure, representing the ratio of time spent on the eventually-chosen charity to the time (per item) spent on non-chosen charities. A higher ratio indicates a greater propensity towards confirmatory information processing. The only significant effect on this measure was an interaction between aversive indecisiveness and the similarity manipulation ($\chi^2(1) = 12.394$, $p < .001$). Increasing aversive indecisiveness increased time-based confirmatory behaviour when the charities were dissimilar. Conversely, increasing aversive indecisiveness decreased the confirmatory time ratio when the charities were more similar.

The other confirmation bias measure was an event-based ratio of the number of times the eventually-chosen charity was seen, to the total number of times the non-chosen charities were seen. A similar interaction between aversive indecisiveness and similarity was observed ($\chi^2(1) = 11.091$, $p = .001$) mirroring the results observed for the time-based confirmation measure.

Self-focus and similarity congruency. Considering the patterns observed in the EMMs for the statistically significant interactions between the two factors, *post hoc* analyses were run to examine the effect of the correspondence between the similarity and self-focus manipulation. A new dummy variable was created based on the congruence (i.e., high similarity and high self-focus, or low similarity and low self-focus) or incongruence (i.e., high similarity and low self-focus, or low similarity and high self-focus) of the two experimental factors. This variable was entered as a fixed factor instead of the two separate factors, repeating the above analyses.

Table 5.6

Main Effects, EMMs and Mean Differences for the Similarity/Self-focus Congruence Variable on CDT Behavioural Measures

Measure	$\chi^2(1)$ (*p*)	Congruent: *M* (*SE*)	Incongruent: *M* (*SE*)	Mean diff. (*SE*)	*p*
Total time (s)	**7.541 (.006)**	**448.962 (41.137)**	**312.052 (28.802)**	**136.910 (51.229)**	**.008**
Total seen	**4.644 (.031)**	**51.690 (4.619)**	**38.210 (4.024)**	**13.470 (6.193)**	**.030**
Unique seen	**4.201 (.040)**	**19.760 (1.480)**	**15.630 (1.320)**	**4.130 (2.007)**	**.039**
Excluded	1.548 (.213)	6.870 (.823)	5.610 (.759)	1.260 (1.034)	.223
Confirmatory bias (time)	.677 (.411)	7.632 (.966)	6.567 (.830)	1.065 (1.286)	.408
Confirmation bias (charities seen)	.700 (.403)	.146 (.140)	.130 (.012)	.016 (.019)	.393

Note. Measures for which a significant main effect ($p < .05$) was observed for the congruence variable are indicated in bold.

As shown in Table 5.6, significant main effects for the congruency variable were observed for the total time, total charities seen and unique charities seen, mirroring the results above, except for the number of charities excluded. The mean differences are

statistically significant (albeit helped by the absence of a more conservative *p*-value), showing that greater decision time and informational search was exhibited when self-focus and similarity were both high. Nonetheless, these post-hoc analyses should be treated with care and require further investigation.

CDT: Self-Reported Experience and Perceptions

Participants' responses to the set of post-task questions about their experience of the CDT were analysed using a series of univariate linear models with a similar structure as the behavioural measures above. The results of these analyses are in Appendix 5.6.

Experienced indecision. As hypothesised, aversive indecisiveness predicted higher levels of recalled indecision ($F(1, 86) = 8.709$, $p = .004$, $\eta_p^2 = .092$; model $R^2_{adj} = .167$). The two experimental factors were also significant independent predictors of indecision. Consistent with hypotheses, greater indecision was experienced in the high self-focus condition than in the low self-focus condition ($M = 51.905$, $SE = 3.121$ vs. $M = 41.113$, $SE = 3.226$, mean difference = 10.792, $SE = 4.55$, $p = .020$, $CI_{.95} = [1.738, 19.847]$; $F(1, 86) = 5.710$, $p = .019$, $\eta_p^2 = .062$). Similarly, greater indecision was reported in the high-similarity condition ($M = 51.863$, $SE = 3.148$ vs., $M = 41.154$, $SE = 3.159$, mean difference = 10.709, $SE = 4.496$, $p = .019$, $CI_{.95} = [1.772, 19.647]$; $F(1, 86) = 5.773$, $p = .018$, $\eta_p^2 = .066$). Unlike the behavioural measures, there no significant factor-by-factor interaction was observed.

Difficulty. Aversive indecisiveness also predicted higher ratings of the difficulty experienced in choosing a charity ($F(1, 86) = 7.399$, $p = .008$, $\eta_p^2 = .079$; model $R^2_{adj} = .097$), unlike in the LDT. Contrary to hypotheses, there was no main effect of the similarity manipulation: the high-similarity condition was not rated as more difficult than the low-similarity condition ($F(1, 86) = 1.606$, $p = .209$, $\eta_p^2 = .018$). There was, however, a significant three-way interaction between the manipulations of self-focus, similarity and aversive indecisiveness ($F(1, 86) = 6.759$, $p = .011$, $\eta_p^2 = .073$). An inspection of the parameter estimates showed that aversive indecisiveness had a positive effect on reported difficulty in the low-similarity, low self-focus or high-similarity high self-focus conditions, with little to no effect in the other (non-congruent) conditions.

Regret. The extent to which participants felt that they regretted their selection of charity differed between the two similarity conditions ($F(1, 86) = 4.637$, $p = .034$, $\eta_p^2 = .051$; model $R^2_{adj} = .187$). More regret was experienced where the charities were

more similar than when they were less similar (high similarity: $M = 30.508$, $SE = 2.768$; low similarity: $M = 22.032$, $SE = 2.777$; mean difference = 8.476, $SE = 3.953$, $p = .035$, $CI_{.95} = [.618, 16.334]$). Aversive indecisiveness also had a strong positive effect on reported regret ($F(1, 86) = 22.489$, $p = < .001$, $\eta_p^2 = .207$).

Self-consciousness. As noted earlier, participants' experience of self-consciousness during the CDT were not predicted by the self-focus manipulation as expected. However, aversive indecisiveness was the sole significant predictor ($F(1, 86) = 6.607$, $p = .012$, $\eta_p^2 = .071$; model $R^2_{adj} = .060$) in the same positive direction as with previous self-report items.

Fatigue. Although the self-focus manipulation did not affect levels of self-consciousness, it did influence experienced fatigue ($F(1, 86) = 5.581$, $p = .020$, $\eta_p^2 = .061$; model $R^2_{adj} = .110$). Participants in the high self-focus condition reported more fatigue after the CDT ($M = 46.129$, $SE = 3.095$) that those in the low self-focus condition ($M = 35.487$, $SE = 3.199$; mean difference = 10.642, $SE = 4.512$, $p = .021$, $CI_{.95} = [1.665, 19.620]$). There was again a positive effect of aversive indecisiveness ($F(1, 86) = 7.486$, $p = .008$, $\eta_p^2 = .080$).

This measure was the only one where avoidant indecisiveness was implicated, with a significant three-way interaction together with the two experimental IVs ($F(1, 86) = 5.414$, $p = .022$, $\eta_p^2 = .059$). Higher levels of fatigue were experienced with increasing avoidant indecisiveness for participants in the low self-focus/low similarity and high self-focus/high similarity conditions. The reverse effect was found for the other two (content-frame incongruent) conditions, where increasing avoidant indecisiveness predicted lower levels of reported fatigue. There were no other significant main or interactive effects for avoidant indecisiveness across the self-report items.

Discussion

This admittedly ambitious study sought to examine the effect of avoidant and aversive indecisiveness on indecision in conjunction with the content, framing and self-regulatory demands of the decision-making task. Emphasis was given in this study to process indecision, which is the difficulty of enacting the motivation towards good decision-making as a psychological activity. This was examined in terms of conscious aversive difficulty, behaviours, and psychophysiological stress and exertion. Given the multiple functional motivations of the decision-maker, it was also anticipated that that both approach and avoidant indecision behaviours would be observed.

While the overall fate of hypotheses was mixed, some of the analyses were complicated by unexpected results from the experimental design and assumptions relating to the task and the experimental manipulations. On the whole, however, the results relating to indecision and indecisiveness supported the predictions of the functionalist model and were consistent with findings reported in Study 1.

Indecisiveness

The first key finding was in relation to the stability of the three empirical indecisiveness factors which were identified in Study 1. The combined IS-R and PFIS could again be separated into aversive, avoidant and ruminative dimensions of indecisiveness. This result strengthens the conclusion that a multidimensional approach to indecisiveness is needed. It also adds weight to the validity of aversive and avoidant indecisiveness being separate components of indecisiveness reflecting different functional and motivational antecedents.

However, these findings do not obviate the need for further scale development and refinement as discussed in the previous study. It is worth bearing in mind, for instance, that the scale items which were in flux between two studies were those relating to not only rumination but also touched on aversive or avoidant indecisiveness. This point of instability shows that further work is needed to evaluate the status of ruminative processes in indecisiveness. The present study was not that occasion, however, and ruminative indecisiveness was omitted from the analyses since no specific predictions were made about it as part of the theoretical framework.

Paradata. In addition to providing incremental psychometric evidence, this study also examined how aversive and avoidant indecisiveness shaped indecision behaviour in and around decision-making. Results from the paradata measures showed that how people responded to the IS-R and PFIS items was influenced by avoidant indecisiveness, but not aversive indecisiveness. Consistent with the expected effect on behaviour from avoidant indecisiveness, participants high in this dimension demonstrated greater withdrawal in terms of shorter response times and less selection-based activity.

The absence of an effect of aversive indecisiveness in the other direction suggests that the act of responding to personality questions was not appraised as a decision-making task. Consistent with hypotheses, the data instead suggest that participants higher in avoidant indecisiveness were threatened by having their own indecisiveness brought into the foreground. This was likely to have elicited self-

presentation indecision, where effort is directed towards managing one's identity as an indecisive decision-maker. Minimising the time spent on the questions is consistent with a motivation to dismiss the salience of this undesirable identity. An alternative explanation is that self-presentation indecision makes participants want to *appear* more decisive by responding to the indecisiveness questions in a more decisive — and therefore quicker — way.

Future research could disentangle these processes by comparing the paradata from items relating to decision-making and indecisiveness with items from scales on clearly unrelated aspects of personality. Participants could also be primed with socially positive or negative values of indecisiveness before completing the personality measures to heighten or weaken the need for apparently corrective prosocial behaviour.

The paradata measures used in this study were admittedly unsophisticated. Subsequent studies may benefit from using more advanced approaches to mouse-movement tracking, such as Freeman & Ambady's (2010) MouseTracker software, or eye movement tracking (Patalano et al., 2009). Nonetheless, the results show that avoidant indecisiveness is relevant even on the edges of decision-making. This is consistent with the view of indecisiveness as an attention-biasing disposition, resulting in motivated behaviours where the participant's identity as decision-maker is activated even in the absence of an actual decision event**.**

Indecisiveness and baseline self-regulatory capacity. Continuing the analysis of indecisiveness ahead of the two decision-making tasks, higher levels of aversive indecisiveness were associated with lower HF-HRV at baseline. Interpreted as a measurement of tonic HRV, these results show that aversive indecisiveness is associated with lower self-regulatory capacity (Park et al. 2014). In turn, lower self-regulatory capacity is associated with a greater propensity towards hypervigilance and impaired coping when under stress. This is consistent with the characteristics of process indecision set out in the functionalist model. It also suggests that a consequence of aversive indecisiveness is a lower level of adaptive flexibility which can be measured before decision-making begins.

Admittedly, the anticipation of difficult decision-making ahead in the study meant that the resting measurement was unlikely to be a perfect baseline measurement of HRV. Being told to sit quietly alone in a lab connected to a heart rate monitor knowing that you are about to complete a series of difficult decision-making tasks carries with it some apprehension and autonomic arousal. This is not particularly problematic, since self-regulatory capacity is always affected by situational and

psychological factors; it is a variable phenomenon rather than being a fixed individual difference. The results from a common baseline amongst participants do show that the anticipation of decision-making is reflected in lower instantaneous self-regulatory capacity.

A future study could seek to differentiate between resting and anticipatory HRV by priming different expectations of the study (e.g., as difficult test of decision-making vs. a test of persistence: Halkjelsvik & Rise, 2015) to see whether the anticipation of decision-making is the most proximate source of stress and depletion for participants high in aversive indecisiveness.

Affect change. Different effects of avoidant and aversive indecisiveness were observed on the I-PANAS-SF. Higher levels of avoidant indecisiveness was correlated with lower pre-task positive affect. That is, the anticipation of an imminent decision-making activity suppressed the levels of positive affect for those already sensitive to decisions as threats. On the other hand, lower pre-task negative affect was uniquely predicted by higher levels of aversive indecisiveness. These findings mirrored the PANAS-X results in Study 1. One plausible explanation here, taken together with the effect of aversive indecisiveness on lower levels of baseline HF-HRV, is that the anticipation of an upcoming decision-making task — even under a state of ignorance about what it entails — was sufficient for more negative emotion to be felt.

Only aversive indecisiveness was a significant predictor of I-PANAS-SF change scores. Despite having higher levels of pre-study negative affect, participants higher in aversive indecisiveness experienced a flattening of affect by the end of the study. They experienced less negative emotions than before the study, but also less intense positive emotions. This suggests that there was greater affective reactivity during decision-making but a kind of affective depletion after the demands of being a decision-maker had resolved. In relation to avoidant indecisiveness, the lack of change suggests that there was a maintenance of low pre-task positive affect throughout the study with no change in negative affect. This is consistent with a stance of suspicion and affective withdrawal, particularly a kind of defensive insulation against negative emotional experience.

Lexical Decision Task

Results from the LDT can be seen from two perspectives. The first relates to the use of the LDT as a task at the periphery of decision-making. The task involves making many choices but in a way that lacks the depth, discretion and “decisionality” of other

intentional decisions (Beach, 2010). Even in this context, opposing main effects of aversive and avoidant indecisiveness on task behaviour and outcomes were observed, with a sharper antagonistic pattern of results than had been expected.

Yet the study showed that it is not just indecisiveness which influences indecision. How the decision-maker experiences the decision event is also very much relevant. The same decision-making task, with the same kind of content, could be appraised in very different ways depending only on the decision-maker's immediate psychological resources. The results showed an unexpected bidirectional effect of LDT on HRV depending on task order. Where the LDT was completed first, overall HF-HRV suppression was observed as had been hypothesised. However, where the LDT was completed after the CDT, there was an overall pattern of HF-HRV enhancement. This was unexpected, in that it the LDT was anticipated to be only a negatively stressful and depleting task. However, the data are not inconsistent with the psychophysiological literature which shows that stress can be appraised positively as a challenge and adaptive response (Park et al., 2014).

Why the pattern of HRV enhancement and adaptive challenge was observed in the LDT-last condition is the subject of some speculation. One explanation is that the CDT was the advertised and anticipated focal point of the study. After participants had completed this part of the study, they may have felt less apprehension and when completing the LDT. Moreover, the positive reinforcement of making a successful decision in the CDT (as it could only ever be) may have bolstered participants' sense of capacity and competence as a decision-maker. The original hypothesis may have underestimated participants' range of appraisals including in the positive direction. Replication and further inquiry is needed here.

These different self-regulatory modes (challenge vs. threat) combine with indecisiveness to have different effects on indecision behaviour. As hypothesised, higher aversive indecisiveness predicted an overall slower but less accurate categorisations of words and non-words. This finding is consistent with behaviour expected in process indecision, where the difficulty of good decision-making interferes with performance and leads to greater time and more affective reactivity during the activity.

However, this effect also depended on how the task was appraised. Where the self-regulatory mode became more characterised by increasing defensive stress and threat (HRV suppression), the impairing effect of aversive indecisiveness on time and accuracy increased. Under HRV enhancement, however, there was very little effect of

increasing aversive indecisiveness on these two measures. That is, under a challenge appraisal, aversive indecisiveness was irrelevant to task performance.

Also supporting the hypotheses, higher avoidant indecisiveness predicted shorter response times, regardless of self-regulatory mode. The structured and repetitive nature of the LDT, which offered no way to escape the demands of decision-making, may have prompted participants higher in avoidant indecisiveness into a locomotion-based regulatory mode of just "doing" the task and getting it over and done with as quickly as possible (Higgins, Kruglanski & Pierro, 2003; Kruglanski et al., 2000).

Rather than avoidant indecisiveness not affecting response accuracy, as had been hypothesised, there an unexpected positive association was observed. This varied with self-regulatory mode, with the effect being more pronounced under increasing threat-based stress. These results suggest that avoidant indecisiveness did not prompt a motivation to escape the LDT at any cost. Rather, this result may be best explained by the somewhat paradoxical association between avoidant indecisiveness and increased appetitive drive observed in Study 1. In the absence of feared decision-maker invalidity, but while still under immediate threat-based stress, this drive appears to have been directed effectively to meet the demands of the task.

This raises a curious boundary issue for defining indecision. Since this combination of drive and avoidance occurs without any objective or subjective impairment, this behaviour and outcome stretches what should, or should not, be considered to be indecision. Nonetheless such behaviour occurs under narrow set of conditions: where there is limited agency of the decision-maker, negligible consequences and, importantly, where the task is not explicitly framed as a decision-making situation. This but does not necessarily generalise to other situations, but instead points to the possibility of maladaptive avoidance where these conditions are not met. Nonetheless, the possibility of indecisiveness in such limited circumstances to *prevent* indecision is not inconsistent with the theoretical model but requires further exploration.

Looking beyond time and accuracy, for instance, there are some signs that avoidant indecisiveness may not be completely adaptive even in the LDT. The level of avoidant indecisiveness, just like aversive indecisiveness, predicted the length of time participants spent taking a break between the 20 blocks of the LDT. Different motives may be at work here for the two dispositional dimensions. For aversive indecisiveness, the length of breaks depended on self-regulatory mode. Longer breaks were only observed with greater threat-based response. This suggests that participants were using

the break as to recuperate and restore their self-regulatory resources. In the case of avoidant indecisiveness, only a main effect was observed. The break time may therefore be a function of a general avoidance of contact with decision-making situations where there is unnoticed discretion to withdraw (Patalano et al., 2009), even if to do so is not entirely adaptive.

On the self-report questions, aversive indecisiveness was associated with a greater intensity of ratings on experienced indecision and fatigue. These results were in line with findings from Study 1 and the present hypotheses that greater conscious recall of aversive indecision and related aspects of decision-making would be elicited with higher aversive indecisiveness. Avoidant indecisiveness had no effect on any of the self-report measures, in keeping with the motivated avoidance of the decision experience and its implications for the self.

An unusual finding was that participants higher in aversive indecisiveness felt that they were more accurate on the LDT compared with other participants when in fact they tended to be less accurate. This might be regarded as a form of rationalisation, combined with their (accurate) perception that they were slower than average. Participants may have been justifying their indecision, portraying it as functional (i.e., resulting in greater accuracy), rather than being the result of dysregulation or distraction.

Charity Decision Task

The CDT, as an original attempt at a more meaningful and naturalistic in-lab decision-making scenario, was less successful in eliciting indecision as had been expected. While the CDT was perceived as more difficult and less fatiguing than the LDT, as hypothesised, there was no significant difference in recalled and reported indecision between the two tasks. This was not an expected finding, especially given that the LDT was set up as a minimal example of decision-making in which little aversive indecision was expected. Indeed, on the visual analogue scale, mean ratings of experienced indecision on the CDT were still below the mid-point of the scale. This was lower than was intended.

Moreover, psychophysiological data showed that unlike the LDT, there was no statistically significant change in HF-HRV from baseline that could be attributed to the engagement with the CDT. There was no evidence that the task induced an autonomic stress response in participants, either in terms of threat or challenge. Moreover, the same neutral response was observed in both task order conditions, indicating that participants who completed the threateningly stressful LDT first were able to return to a

resting level of self-regulatory capacity in the CDT. HF-HRV change also did not significantly account for any of the behavioural or self-report measures.

The reasons for this lack of arousal might be due to the nature of the task. The lack of costs associated with information search and the absence of time pressure or any exploration-exploitation trade-off meant that there were only limited cognitive costs of decision-making. There was also a lack of identifiably bad outcomes. Even participants in the high self-focus condition, who were told that their donation would only be made to their preferred charity if they exceeded a threshold for good decision quality, were still able to make a choice. These participants knew that a donation would be made to a good cause even if that charity was not their first preference. This is still a good result for which participants were partially responsible. There is therefore opportunity for future research to create more stressful tasks but which still allow for self-directed exploration and control over the decision-making process. For now, the CDT could only be characterised as a discretionary but undemanding decision-making task.

The absence of a task order effect on HF-HRV, behavioural measures and self-report items for the CDT meant that this variable could be omitted from analyses, simplifying this part of the study to a 2×2 factorial design. This was still sufficiently complex given the factor-by-covariate interactions. The two experimental manipulations were also less clear-cut in their effect than had been intended. While participants noticed the difference in similarity between the high-similarity and low-similarity set of charities, this did not directly translate to differences in perceived selection difficulty as expected. Nonetheless, this factor did have predictive value in relation to behaviour and self-report, suggesting that any primary effect on outcome indecision may not have been directly amenable to valid post-hoc self-report.

The manipulation of self-focus also did not produce a significant difference in self-reported levels of self-consciousness during the task. However, the manipulation did affect recalled indecision and behavioural measures in the expected direction. Participants may have had difficulty identifying and quantifying their level of self-consciousness, which can be an elusive construct. Clearer and more specific wording in both the induction instructions and self-report question may help to elicit and measure the effect of the manipulation in future research.

Compared with the LDT, the direct effect of indecisiveness on CDT behaviour was less pronounced. Higher levels of aversive indecisiveness were associated a longer time to decision, although this only was a small effect. The weakness of the effect is

not unexpected in the absence of stress, noting that in was only in the presence of HRV suppression in the LDT that the effect of aversive indecisiveness was observed. Aversive indecisiveness did not account for the number of unique or total items seen, although it did predict confirmatory information seeking behaviour in the high-similarity condition. This finding help make sense of previous mixed findings about indecision and confirmation bias (Rassin et al., 2008; Ferrari & Dovidio, 2000; cf. Patalano & Wengrovitz, 2007), suggesting that that confirmatory search or "tunnel vision" is not a universal consequence of indecision. It is only associated with aversive, but not avoidant, indecisiveness, and depends on the presence of selection difficulty.

Contrary to hypotheses, avoidant indecisiveness was not associated with withdrawal and truncated decision-making behaviour in the CDT. There was no effect of this dimension of indecisiveness on behaviour either at the main effects or interactive level. On one hand, the demands of the task may have been beneath the threshold for avoidant indecisiveness to be triggered. The ease with which participants are able to proceed to a successful charitable donation means that their decision-making capacity is not threatened. Nor does the activity of decision-making obstruct participants' goal pursuit of choosing a desired charity. Recall though that the LDT also had little of these characteristics (and intentionally so, in that task) but a clear effect of avoidant indecisiveness was observed. The better explanation again may therefore be the presence of immediate stress in the LDT, but not in the CDT.

More consistent significant effects on CDT behaviour were observed across multiple variables for the interaction between the two experimental factors, independent of indecisiveness (i.e., significant 2-way but not 3-way interactions). That is, behaviour in the CDT was often best explained by the combination of similarity and self-focus. Where there was a match between the level of similarity and self-focus (i.e., high similarity/high self-focus, or low similarity/low self-focus), greater approach-based behaviour was observed. Participants took more time before selection and looked at more items. On the other hand, a mismatch between the levels of the factors (i.e., high similarity/low-self focus, or low similarity/high self-focus) led to a shorter and curtailed decision-making process.

An exploratory post-hoc dichotomous variable (congruence vs. incongruence) was created and was found to be a significant predictor of CDT behaviour. However, there is a danger here of conflating differences in motivations by looking at the same behavioural outcomes. Looking just at the congruent conditions, the tendency towards decision latency and increased search in the low similarity/low self-focus condition, for

instance, could be due to there being too little motivation for the decision-maker to bring about closure through choice, especially in a costless and unstressed context. The additional time and search may therefore be unstructured and meandering decision-behaviour.

On the other hand, in the high similarity/high self-focus condition, the combination of content and context would create more favourable conditions for prototypical indecision behaviour, even in the absence of underlying physiological stress. However, questions remain as to whether this combination, without a corresponding change in HRV or self-report, meant that indecision was situationally legitimised. That is, participants may have inferred from the context of the decision that they *ought* to take longer to decide, and therefore did take longer, even though the decision was not felt to be difficult. Although further data are needed to test this, there is at least the possibility of more complex forms of situationally-induced pseudo-indecision beyond those anticipated by the present model.

Finally, self-reports of experiences on CDT showed a similar pattern of results to the LDT. Despite a limited effect on behaviour, aversive indecisiveness was a significant predictor for all five variables: indecision, difficulty, regret, self-consciousness and fatigue. However, relatively strong effects on self-report measures were observed here even though aversive indecisiveness had little effect on behaviour or physiological stress. This disjunction between reported experience and behaviour suggests that there may be a tendency to be oversensitive to or over-report indecision-related experiences by people high in aversive indecisiveness. There was again no association between avoidant indecisiveness and recalled experience, except for levels of fatigue which depended on the congruence or incongruence of the experimental factors.

Further Research

A number of limitations of the CDT have already been mentioned. While the ability for the CDT to induce stress and indecision needs to be revisited, there may also be other opportunities to modify the design of the task. Although derived from sequential exploration tasks like the information board paradigms used by Patalano & Wengrovitz (2007) and Ferrari & Dovidio (2000), the CDT was not designed to evaluate different search strategies by indecisive participants. This reflected a different theoretical conceptualisation of decision difficulty which emphasises the appraisal and experience of the decision event. However, having now ascertained that indecisiveness

is a multidimensional construct with different effects on behaviour, it may be wise to revisit the issue of search strategies. In doing so, some attention could be given to the role of outcome indecision as part of attribute-based evaluation, not just process indecision as has been the focus here.

Further research could look at both behaviour and experience at a higher resolution within decision-making tasks such as the CDT or LDT. This could be facilitated with tools like eye-tracking (Patalano et al., 2009) or other psychophysiological and neuroimaging techniques. Other psychophysiologically-oriented decision-making tasks could also be used. This might include the Heartbeat Detection Task, where participants make binary forced choices about whether an auditory representation of their real-time heartbeat is accurate or inaccurate (Eichler & Katkin, 1994; Bechara & Naqvi, 2004; Wiens, Mezzacappa, & Katkin, 2000; Domschke, Stevens, Pfleiderer, & Gerlach, 2010). Not only does this measure interoceptive accuracy, but, with appropriate modifications, the task could also act as an example of decision-making about uncertain interoceptive stimuli in ways which could activate all three forms of indecision.

Simpler process-tracing techniques such as mouse-activated hidden panels for information search (Patalano & Wengrovitz, 2007), or even a return to concurrent verbal protocols (Ericsson & Moxley, 2011) may also help yield greater understanding of indecision as a process within a decision event. Alternatively, the present decision process data in both the LDT and CDT could be reanalysed making use of the other attributes (e.g., responses to pseudowords vs. words in the LDT, or when and how sub-choices about the choice set were made during the CDT), and also by treating the data as a time series.

One possibility for reanalysis would be to examine the duration (e.g., the time to decision in the LDT) and the frequency data (the number of charities seen) as together in a summed model, rather than separately, in order to account for the joint effects of time and events. Smithson & Shou's (2014) simulation and hierarchical Bayesian methods for modelling randomly stopped sums are a novel and promising way to do this, as evidenced by their application of the model to an earlier version of the LDT results from this study.

Finally, future study design would need to account for language ability. Native English speaker status a significant covariate across multiple variables in both parts of the study, predicting decreased accuracy and increased response time on the LDT and greater reading time on the CDT. While all analyses accounted for this dichotomous

status, this may not have been a sufficiently fine-grained measure to account for the significant variance. Further research may benefit from using less language-intense stimuli or the use of a more dimensional measure of language ability.

Ahead

This study accumulated a sizeable set of results through multiple methods which generally supported the functionalist model of indecision. Results from the LDT, CDT and other parts of the study showed that indecisiveness and attributes of the decision situation and the decision-maker's capacity combine, together with concurrent motivations and appraisals, to enliven indecision behaviour and experience.

One limitation, as has been discussed, was that the nature of the tasks did not operate quite as intended. The LDT was stressful (in both positive and negative ways) and was differentially influenced by aversive and avoidant indecisiveness. However, it was a minimal decision with limited generalisability to most other decisions situations. The CDT, on the other hand, was more naturalistic but turned out to be less stressful and demanding than intended, giving rise to less challenge to the decision-maker's motivations and therefore produced less observable indecision.

The obvious way forward in the next study is to strike a balance between these two tasks. Using a simpler task, the next study seeks to look more closely at decisional responsibility and self- or task-directed attention as one immediate feature of the decision-maker's salient identity and role.

CHAPTER 6:
STUDY 3 — DECISION-MAKER MOTIVATIONS, INDECISIVENESS AND INDECISION

This third study examines how different motivations of a decision-maker, explicitly primed ahead of a decision-from-experience task, interact with indecisiveness to influence indecision processes and behaviour. Consistent with the predictions of the functionalist model, Studies 1 and 2 had found that there are multiple pathways to each indecision process, resulting in different kinds of experiences and behaviours. Indecision emerges from the interaction between the decision content, the decision-maker's appraisal of the context and the effects of aversive and avoidant indecisiveness. Underlying these empirical findings, however, is the central issue of functionalism: that each indecision process reflects a maladaptive attempt to live out a salient goal of the decision-maker. To repeat these once more, the motivation to attain good decision outcomes can result in outcome indecision, while the performative aspect of good decision-making can be met with process indecision, and attempts to be appear as a good decision-maker can generate self-presentation indecision. Each of these motivations and indecision processes can differ in salience at any given time.

Following the lead of previous studies, Study 2 sought to trigger these indecision processes as directly as possible, such as through manipulating the level of stress and self-regulatory capacity, or by varying the similarity of the choice set. This, however, meant that the motivations of the decision-maker were less directly and uniformly stimulated. For instance, there was an attempt to manipulate the participant's self-awareness of their agency and responsibility in the CDT, but this was perhaps too broad and therefore had a less specific effect than anticipated within the non-stressful task.

Decision-Maker Motivations and Attention

One aim of the present study is therefore to examine the effect on indecision when different motivations of the decision-maker are made more explicit ahead of a computer-based decision-making task. This was tested experimentally between subjects through pre-task instructions and subsequent reminders which directed participants' attention to different aspects of the decision-making activity.

Salience of indecisive identity. The study investigated the effect on indecision of having participants' identity as an indecisive decision-maker made salient. Accordingly, in one experimental condition, participants were told that the task ahead

was designed to elicit experiences of indecision and would be a test of their indecisiveness. Participants were told to monitor their experience of indecision closely throughout the task, and were asked to write about their experiences of indecision at various points. This induced salience of indecision and indecisiveness was hypothesised to directly activate the motivation to appear to be a good decision-maker. This was expected to be particularly threatening to participants for whom the process of deciding is aversive and difficult.

This threat is directed to the self but in a social context: it is a threat to the desire to be a good decision-maker benchmarked against normative expectations of decisiveness. As a result, it was anticipated that self-presentation indecision would be more likely. That is, participants would be more likely to behave in a way that made them look more stereotypically decisive, even if this impaired the ability to make a good decision. Such behaviour, on the face of it, would resemble the kind of behaviour previously observed with avoidant indecisiveness (i.e., shorter decision time and reduced information search). Reversing the pattern observed in previous studies, however, this pseudo-decisiveness produced by self-presentation indecision was expected to vary with levels of aversive indecisiveness and not avoidant indecisiveness. That is, higher dispositional sensitivity to invalidity and error in decision-making accentuate the situationally-induced motivation to present oneself more decisively when indecisiveness was made salient.

Avoidant indecisiveness, on the other hand, was expected to have its usual behavioural effect of minimising engagement with the decision-making task. That is, the directed focus on the participant's own indecisiveness was not predicted to have any additional significant effect on behaviour, because the self-concept as an indecisive-person would already be increasingly detached from situational cues and provocations. The previous studies showed there is increasing dissociation from the self as decision-maker with higher levels of avoidant indecisiveness in a way which would only further insulate the person from this attentional focus.

Salience of decisional strategy and outcomes. In the other experimental condition, participants were instructed to be conscious of the strategies and tactics they were using to maximise their performance on the task. While the induction mentions the maximisation of outcomes, the focus is instead on the participant's decision-making strategy. Since the task itself had little opportunity for the kind of rational deliberation which would give rise to outcome indecision, this condition was intended to draw attention to the decision-making process in a different way to the self-focus

manipulation attempted in Study 2. It was hypothesised therefore this condition would make process indecision more likely. As such, aversive indecisiveness would have its standard effect on increasing greater approach-oriented indecision, reflected in greater decision time, information search and confirmatory processing. On the other hand, the effect of avoidant indecisiveness was expected to be compounded when decisional strategy was made salient in the task. It is the difficulty of translating decisions to good outcomes, rather than the inherent aversion of the decision-making process, which is of concern to people high in avoidant indecisiveness. Underlying avoidant indecisiveness is a strong goal-oriented drive which can result in a "choking under pressure" phenomenon when under performance-based stress. A control condition was also included in the study, with neutral instructions given to the decision-maker.

The Card Sampling Game

The second aim of this study was to be able to examine these indecision processes and the influence of indecisiveness using a simpler design than in Study 2. Results from the CDT in Study 2 showed that there was only a limited effect of indecisiveness on indecision behaviour when the task and decision is not appraised as sufficiently demanding or stressful by most participants. This finding is consistent with the functionalist model of indecision, in which there is not only a threshold appraisal of "decisionality" but also an ongoing evaluation of the demands of the decision and the response of the decision-maker. As Janis & Mann (1977) pointed out, people are reluctant decision-makers and thus a painless and low-effort path towards choice will be taken wherever possible. This, however, creates problems when wanting to study the effect of indecisiveness in a sufficiently difficult but controlled decision-making task.

As such, the present study sought to use a decision-making ask which had a higher level of immediate demand on the decision-maker than the CDT, but which retained room for discretion and control not available in the LDT, and was less influenced by language ability. The study therefore used a simple online decision-from-experience (DFE) card game as the sole behavioural decision-making task. The game was a novel variation of the sampling-paradigm "computerised money machine" task (Hertwig & Erev, 2009). Participants sampled from two decks of cards presented onscreen without limit or cost. Each card had a payoff value in points which was temporarily revealed while the participant clicked on the card. Participants were instructed to choose the better deck: the one which they thought had better payoffs based on their experience from sampling.

The game therefore resembles other card-based sampling tasks, such as the Iowa Gambling Task (IGT, Bechara, A. Damasio, H. Damasio, & Anderson, 1994) which has been used to demonstrate the role of "gut feelings" or somatic markers in decision-making (cf. Dunn, Dalgleish, & Lawrence, 2006). Unlike the IGT, where the experimenter observes the frequency with which participants sample from two good decks and two bad decks, participants in this game sampled freely before making a single choice between the two alternatives.

Despite the focus on self-presentation and process indecision, there is of course some inherent selection difficulty in finding the better deck. The task draws on memory and underlying computational and somatic marker processes in evaluating better payoffs. The possibility of outcome indecision remains. At the same time, the DFE paradigm means that the uncertainty of the decision-making process is unavoidable. Determining how much sampling is needed before choosing a deck leaves room for not only outcome indecision but the difficulty of being the deciding agent, which can be expressed in either approach or avoidant ways.

Indecision was measured behaviourally in a similar way to the CDT in Study 2, with primary measures of time to choice and the amount of information search (i.e., the number of cards seen before a choice is made). Additional variables were computed from the process data to assess other aspects of decision-making behaviour. These variables included the proportion of active engagement time with the card values, the number of times participants switched between the two decks when sampling, and measures of confirmatory information seeking. Unlike Study 2, the decks could objectively be classified as being better or worse. As such, participants' final selection of deck could be used as an objective indicator of decision quality. Self-report measures were included throughout the game after each round, along with post-game items which were compared with pre-game measures. The aversive and avoidant indecisiveness factor scores from Study 1 were also used in this study as dispositional predictors.

In addition, this card sampling game both extends and contrasts with the CDT in Study 2, which also involved unconstrained information search followed by a one-shot choice between items. Unlike the CDT, the present card game is much more constrained in the nature of the stimulus information. This study pares down the informational component while retaining the freedom to sample before choosing. Like the CDT, the final choice between the two decks also relies on the accumulation of past experiences of sampling. As such, the timing and content of the choice between the

decks is less likely to be influenced by language ability or existing knowledge and preferences. The DFE paradigm also resembles the LDT in its use of rapid sequential repeated choice, but without any feedback. This study accordingly provides an opportunity to extend the results of Study 2, particularly the interactive effect of indecisiveness and task demands on behaviour. The use of only one behavioural task in this study was designed to eliminate any order effects and depletion caused by another task.

Method

Participants

The participants in this study were a self-selected subset of 144 participants who completed Study 1. The median age was 21.5, with a mean of 24.64 and a range of 18 to 66. There were again more female participants (70.8%) than male participants (28.5%), with one participant (0.7%) identifying as neither female nor male. The majority of the sample (66.7%) were students at ANU, with the remainder being students at other institutions, ANU staff members and other community members.

Participants were primarily recruited through an email to Study 1 participants who gave their consent to be contacted when a follow-up study was available. E-mail addresses were not linked to participant responses but were stored separately. Instead, verification of participants' completion of Study 1 and data linkages were facilitated using the participant code entered in the first study. Further recruitment was achieved by promoting this study along with Study 1 through on-campus posters and online notices. Participants received A$5 in cash or psychology course credit in return for their participation, in addition to any incentive they received for Study 1. Ethical aspects of this study were reviewed and approved by the ANU Human Research Ethics Committee under a variation to the protocol which covered Study 1 (see Appendix 6.1).

Design

The study was a one-factor experimental design. The between-subjects independent variable was the manipulation of the participants' attention during the decision process. This had three levels: a strategy-focus condition, an indecisiveness-focus condition, and a control condition. The operationalisation of these conditions is detailed below.

There was also a repeated-measures component of the design, with participants completing four different rounds of the task, each with different card values. Accordingly, these data were modelled as a two-level (rounds and participants) model.

The card sampling game was written in HTML and JavaScript, extended by the Prototype 1.7.1 JavaScript library. Server-side operations were handled using PHP, with an encrypted SQL database used to store participant data. In addition to a modern web browser, no additional plug-ins or software were therefore required for participation. Participants were advised that the task could not be completed on a touchscreen device such as a smartphone or tablet, as the duration of the mouse click for information search could not be reliably measured from touch behaviour. Touchscreen devices and other non-compatible or outdated browsers were blocked from the game using both client-side and server-side checks.

The Alea JavaScript pseudo-random number generator (Baagøe, 2010) was used as an improved replacement of the default JavaScript random number generator function to minimise known systemic browser-based biases. Pseudo-random numbers were used for the purposes of assigning participants to experimental conditions and in choosing from arrays containing the values for the cards in each deck.

Procedure

Participants completed the card sampling game online via a web browser. Before starting the task, participants entered their participant code using the same process in Study 1. If no match was found, participants were advised to complete the Study 1 survey first, or otherwise contact the researcher. Participants who began but did not complete the entire study, including because they intentionally withdrew or otherwise discontinued their participation, were prevented from starting the study again. This was to maintain participants' naivety to manipulations and the nature of the game. Incomplete data were deleted and not included in any analyses.

Participants were then asked to ensure, to the best of their abilities, that they could complete the study in lab-like conditions. They were provided with an on-screen checklist of things to attend to, including silencing mobile phones and background music, closing other computer applications and working independently in a quiet environment. Participants were required to select a checkbox to declare that they had taken these steps to minimise disruptions and potential interruptions before they could proceed.

Next, participants completed a series of baseline self-report ratings using a seven-point bipolar scale about their current mental state. The items addressed:

- Overall mood valence *(extremely negative – extremely positive)*;
- Noticeability/intensity of emotions *(not noticeable at all – extremely noticeable)*
- Noticeability/intensity of mental processes such as thoughts, internal monologue, memories and imagination *(not noticeable at all – extremely noticeable)*;
- Noticeability/intensity of bodily sensations and reactions *(not noticeable at all – extremely noticeable)*;
- Overall energy levels (*extremely tired/fatigued – extremely energised/refreshed*); and
- Noticeability/intensity of behavioural impulsivity, urgency or impatience *(not noticeable at all – extremely noticeable)*.

The manipulation of attention during the decision-making process was then primed through instructions about the game. Appendix 6.2 contains the instructions given to participants. In the *indecisiveness-focus* condition, participants were informed that the game they were about to play was a test of their indecisiveness and was intended to induce the experience of indecision. Participants were asked to pay attention to their experience of indecision during the game and to be prepared to write about what they noticed. Before commencing the game, participants were asked to write one or two sentences about what kinds of indecision-related thoughts, emotions and sensations they might experience during the game.

In the *strategy-focus* condition, participants were told that the game involves evaluating information and thinking strategically in order to achieve the best possible score. Participants were instructed to pay attention to their own strategies and problem-solving processes, and to write about the processes by which they were maximising their score. Ahead of the game, they were also asked to write briefly about what kinds of strategies or tactics might be useful to maximise scores in a decision-making game.

In the control condition, participants were merely informed that they would be playing a simple computer-based card game, and that there would be an opportunity for a break between each round. Instead of writing about anticipated experiences,

participants completed a filler task of retyping a 26-word extract from T.S. Eliot's (1940/1971) poem *East Coker* into a text box, omitting all vowels.

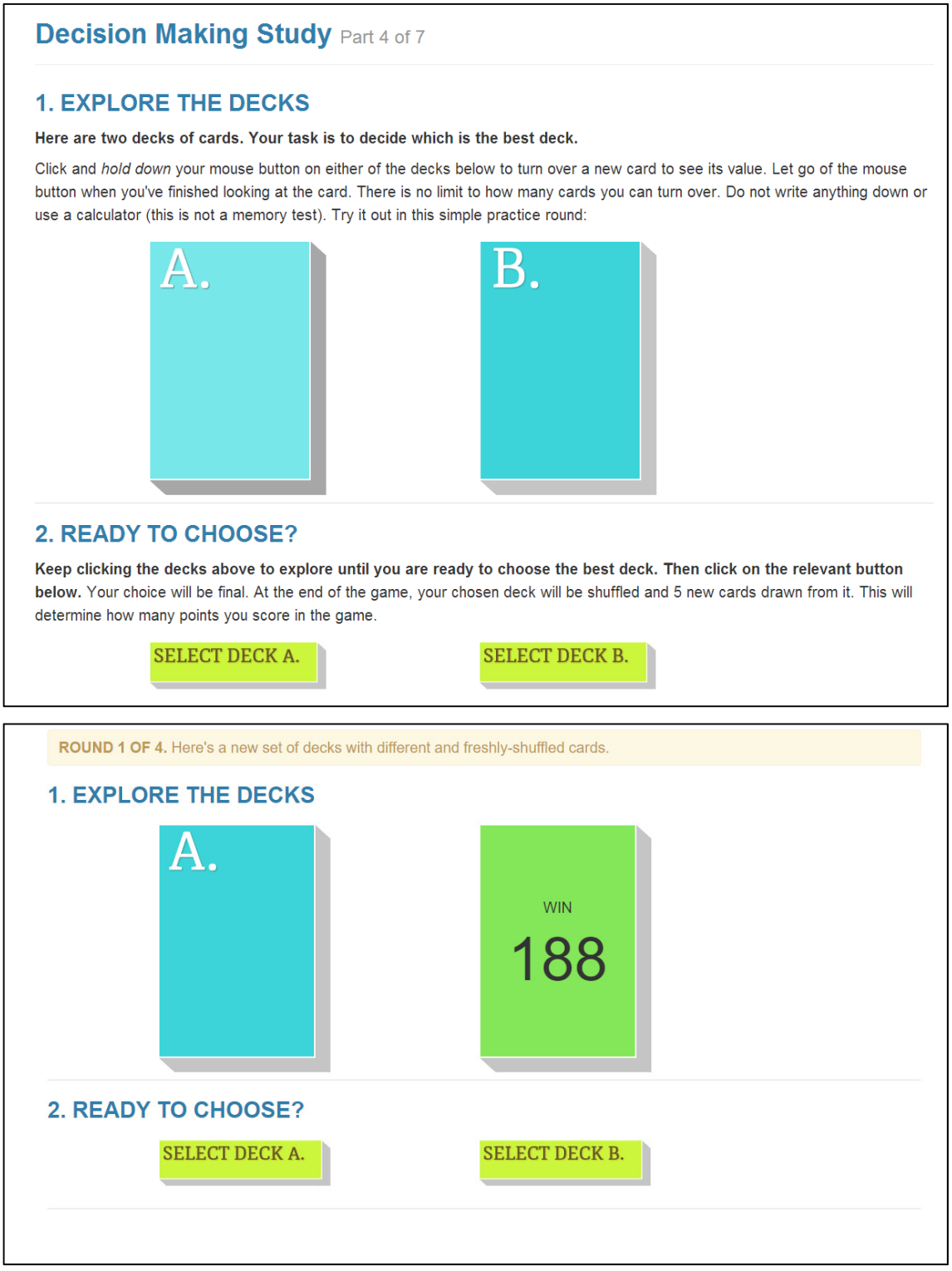


Figure 6.1. Screenshot of (a) card sampling game practice round, showing instructions and (b) standard game round during mouse click on Deck B, showing card value.

Participants were then stepped through a combined practice round and tutorial of the game to familiarise themselves with the objectives and instructions. Participants were informed that they could click on two deck of cards, labelled "A" and "B", to reveal a payoff in points. The number of points was shown while the left mouse button was held down over the deck. When the mouse button was released, the value was hidden and the deck shuffled. Participants were told that they could sample as many cards as they wanted before choose the better of the two decks, in terms of which yielded the higher value of points.

A screenshot of the practice round, with instructions, is shown in the upper part of Figure 6.1. Note that Part 2 ("Ready to Choose?") in the screenshot only appeared after the participant had sampled at least three cards from each deck. In the practice round, the cards in Deck B (M = 74.500, SD = 15.898) was set to be obviously better in terms of points than those in Deck A (M = 4.870, SD = 3.152). If participants nonetheless selected the inferior Deck A, they were asked to try the practice round again and were reminded to choose the deck with the highest payoff. Similarly, if participants were not holding down their mouse button long enough to reveal and comprehend the payoff value (at least 200 ms), they were reminded at the end of the practice block to take the time to inspect the value of each card. These participants were also asked to complete the practice round again.

The game was then commenced using the same interface but without the guiding instructions. Before starting the four rounds, a summary of the priming instructions for the decision-maker's attentional focus was presented once again to participants as a reminder. Participants then played four rounds of the game, each with different pre-set payoff values for each of the decks. The order in which these decks were presented was randomised.

There were 20 cards in each deck. The payoff values of the cards were calculated from discretised beta distributions which were transformed to integers between 0 and 200. When clicked, a card was randomly selected with replacement from the chosen deck. Details of these distributions are described in Appendix 6.3. These distributions were used to generate deck values whose differences are only clearly evident at certain ranges of the distribution. This therefore requires greater sampling of the randomised cards, and increases the difficulty of choosing the better deck. For instance, the deck with the distribution [0, 37, 71, 100, 126, 148, 166, 181, 191, 198, 200] is better than the deck with the distribution [0, 2, 9, 19, 34, 52, 74, 100, 129, 163,

200], but this may only be discovered with sufficient sampling and intentional comparison.[11]

During each round, five direct measures of decision-making behaviour were recorded in a timestamped log. These were: (a) the identity of each card sampled (the deck and the value of the card), (b) the duration of active engagement with the payoff value of each card (i.e., the duration that the participant held down the mouse button over a card to reveal the value), (c) the total number of cards sampled in the round, (d) the total duration of the round before participants chose what they thought was the better deck, and, (e) which deck was chosen as the better deck.

Other variables were computed from these data, such as the number of times the participant switched between decks while sampling, which was a measure of activity, engagement and hesitation which was hypothesised to be related to greater process indecision. The absolute active time measure was transformed to a proportion of the total time before choice, which was also a measure of active engagement as opposed to "idle" time. Ratios of the number of the time and number of clicks on the eventually-selected deck compared with the non-selected deck were also computed. These were used as measures of confirmatory information seeking, like the variables computed in Study 2.

After confirming their selection of the better deck, participants in the experimental conditions were asked to write a few sentences about their experiences of playing the previous round. In the indecisiveness-focus condition, participants were asked to write about their experiences of indecision (in terms of thought processes, emotions, sensations and behavioural impulses) while deciding which deck to choose. In the strategy-focus condition, participants were asked to explain the strategy which they used to select the better deck. In the control condition, participants unscrambled a short sentence taken from an English translation of *Aesop's Fables* where the words were out of order. The content of the sentence was unrelated to decision-making.

Participants then completed a set of self-report questions about their experience of playing the previous round. The order of these questions was randomised between rounds to minimise mindless responding from repeated identical presentation. Using a series of visual analogue scales, participants were asked about:

[11] For brevity, these beta distributions are discretised to show only 10 values instead of the 20 values (across the same range of 0–200) as used in the game.

- Their awareness of aversive indecision during the round (feeling stuck, uneasy or frustrated) during the round *(not at all – extremely)*;
- The difficulty of making a choice between the decks in the round *(not at all – extremely)*;
- Whether the participant *knew* why the decision was easy/difficult, or that it just *felt* easy/difficult *(I knew why – It just felt so)*;
- The extent to which they were focused on their strategy of how to choose the best deck *(not at all – extremely)*;
- Their perceived performance in the round relative to other participants *(much worse – much better)*; and
- Whether they were distracted during the round (e.g., by a telephone call) *(yes/no)*. If participants answered "yes" to this question, their results from this round were omitted from the analyses.

After completing all four rounds of the game, participants responded to the same set of items about their current mental state as a post-task comparison. Three final and additional post-task items, which did not have pre-task counterparts, were also presented on the same response scale. These items enquired about:

- The extent to which participants were impatient over their own decision-making ability during the game *(not at all – extremely);*
- The participant's confidence that they made good choices throughout the game *(not confident at all – extremely confident)*; and
- Whether their perceived performance in the game was directly reflective of their choices and strategy, or whether it was random and out of their control *(completely random – completely due to my actions)*.

Participants were then thanked for their participation and were given debriefing information.

Results

Indecisiveness Factor Scores

Since the participants were a subset of those in Study 1, scores on the standardised indecisiveness factors were obtained from that study. As with Study 2,

only aversive and avoidant indecisiveness was considered in this study. A very slight elevation from the mean was observed on the mean of the aversive indecisiveness factor, but with little change in the standard deviation (M = .074, SD = 1.020; $CI_{.95}$ = [-.099, .247]). Scores on avoidant indecisiveness factor were also not significantly different from the standardised mean and standard deviation (M = -.026, SD = 1.032, $CI_{.95}$ = [-.202, .148]). There was accordingly no indication that this subsample was substantially different from the Study 1 sample in terms of the two indecisiveness dimensions. Nonetheless, the indecisiveness scores were re-standardised for subsequent analyses.

Manipulation Checks

To investigate whether the experimental inductions of decision-maker attention had their intended effect, the post-round self-report measures of experienced indecision and awareness of decision strategy were analysed as partial manipulation checks. However, these analyses are subject to the same caveat as in Study 2, that people may not be able to access or recall many aspects of their decision-making experience, which may be subject to concurrent conflicting motivations.

A two-level linear model was used for each variable, with repeated measures over the four rounds of the game. The fixed predictor was the experimental condition (strategy-focus, indecisiveness-focus or control), with aversive and avoidant indecisiveness entered as continuous covariates. Self-report data for Round 4 were lost for the first 64 participants due to a coding error. Data from rounds where participants reported that they were distracted or interrupted during a round were also omitted (n = 15; 2.2%), leaving a total of 496 observations.

Self-reported indecision did not differ according to the attentional focus condition ($F(2, 462) = 1.519$, $p = .220$, *ns*). The indecisiveness-focus condition did not therefore produce higher levels of self-reported indecision than in the control condition.

Although there was a main effect of attentional focus on participants' self-reported focus on their decision-making strategy ($F(2, 462) = 3.703$, $p = .025$), this was not elevated in the strategy-focus condition as had been expected. Instead, greater attention to decision strategy was reported in the indecisiveness-focus condition (M = 4.857, SE = .125, $CI_{.95}$ = [4.612, 5.102]) than in the control condition (M = 4.397, SE = .144, $CI_{.95}$ = [4.113, 4.681]; contrast estimate = .460, SE = .191, $t(462) = 2.414$, p = .048, $CI_{.95}$ = [.002, .919]), although the size of this difference was small. Subsequent analyses were run with this partial support for the manipulations in mind.

Attentional Focus and Decision-Making Behaviour

Similar GLMM analyses were conducted with the behavioural measures to examine the independent and interactive effects of the attention manipulation and indecisiveness. In these analyses, data from rounds where participants were distracted were again omitted, leaving a total of 531 observations. As in Study 2, a gamma distribution with log-link was used for skewed temporal variables and a negative binomial distribution for count-based variables. Table 6.1 shows the estimated marginal means of each behavioural measure in the game across each of the three decision-maker attentional focus conditions, with the two indecisiveness factors fixed at their means.

Table 6.1

Estimated Means and Standard Errors for CDT Behavioural Measures Across Conditions

	Decision-maker Attentional Focus			
Measure	**Strategy**	**Indecisiveness**	**Control**	**Grand Mean**
Cards seen per round	25.447 (2.028)	29.619 (1.958)	29.962 (2.052)	27.289 (1.160)
Time to choice (s)	29.858 [a] (1.932)	29.128 [b] (1.564)	23.626 [ab] (1.455)	27.390 (.949)
Active time proportion	.392 [c] (.014)	.428 (.012)	.440 [c] (.014)	.420 (.008)
Deck switches	8.706 [d] (.872)	9.441 [e] (.790)	6.160 [de] (.612)	7.970 (.436)
Confirmatory sampling ratio	.504 (.005)	.511 (.004)	.508 (.005)	.508 (.003)
Confirmatory time ratio	.505 (.006)	.514 (.005)	.510 (.006)	.510 (.003)
Proportion of times better decks was chosen	.756 (.038)	.773 (.030)	.712 (.037)	.748 (.020)

Note. Standard errors are indicated in parentheses. Significant sequential Bonferroni-adjusted pairwise mean differences are marked with superscripts of the same letter: *a, b, c, d* ($p < .05$), *e* ($p < .01$). Estimated means are reported at the means of aversive and avoidant indecisiveness.

Independent of indecisiveness, the manipulation of attentional focus had some influence on decision-making behaviour. Contrary to hypotheses, however, there were no statistically significant differences between the two experimental conditions in terms of their independent effect on behaviour. There was no effect of the attentional focus

condition on the number of cards seen before a choice of deck was made ($F(2, 522) = 1.136$, $p = .322$, *ns*). However, participants took longer before choosing a deck in the two experimental conditions compared with the control condition ($F(2, 522) = 4.431$, $p = .012$), as seen in Table 6.1. Similarly, participants in both experimental conditions actively switched between decks when sampling more often than in the control condition ($F(2, 521) = 6.428$, $p = .002$). There was no difference between the strategy-focus and indecisiveness-focus conditions on both measures.

On the self-report measures, participants in both experimental conditions more strongly endorsed the perception that they knew the source of the decision difficulty during the game rather than just feeling the sense of difficulty ($F(2, 426) = 10.907$, $p < .001$; strategy-control: contrast estimate = -.767; SE = .214, $t(462) = -3.585$, $p = .001$, $CI_{.95} = [-1.248, -.286]$; indecision-control: contrast estimate: -.872, $SE = .193$, $t(462) = -4.512$, $p < .001$, $CI_{.95} = [-1.336, -.408]$). Participants in both experimental conditions also reported significantly less change in overall affective valence over the entire game than those in the control condition ($F(2, 127) = 4.420$, $p = .014$, $\eta_p^2 = .065$). Participants reported greater change towards negative affect in the control condition ($M = -.749$, $SE = .151$, $CI_{.95} = [-1.091, -.406]$) than in the experimental conditions (strategy-control: mean difference = .634, $SE = .247$, $p = .035$, $CI_{.95} = [.034, 1.235]$; indecision-control: mean difference = .604, $SE = .203$, $p = .029$, $CI_{.95} = [.047, 1.162]$).

Participants in the strategy-focus condition spent less time actively perusing card values compared with participants in the control condition ($F(2, 522) = 3.407$, $p = .043$), as seen in Table 6.1. This was also an unexpected result, as it had been hypothesised that approach-based behaviour would be reflected in greater active information seeking time, especially in the strategy-focus condition.

Indecisiveness and Indecision Behaviour

Aversive and avoidant indecisiveness were also hypothesised to have independent effects on decision-making behaviour in both approach and avoidant directions as previously observed. This general effect was expected to be amplified under the strategy-focus condition. There was partial support for this hypothesis.

Avoidant indecisiveness. Avoidant indecisiveness had an overall negative effect on the total number of cards seen ($F(1, 522) = 8.170$, $p = .004$) as plotted in Figure 6.2 at the mean and -1 and +1 standard deviations from the mean, although this also depended on the attentional condition ($F(2, 522) = 3.617$, $p = .028$). The slope for

avoidant indecisiveness on information search was significantly steeper in the strategy condition compared with the control condition (B = -.293, SE = .109, t(525) = 2.686, p = .007, CI_{95} = [-.507, -.079]), supporting the hypothesis about increased withdrawal behaviour when decision strategy was salient.

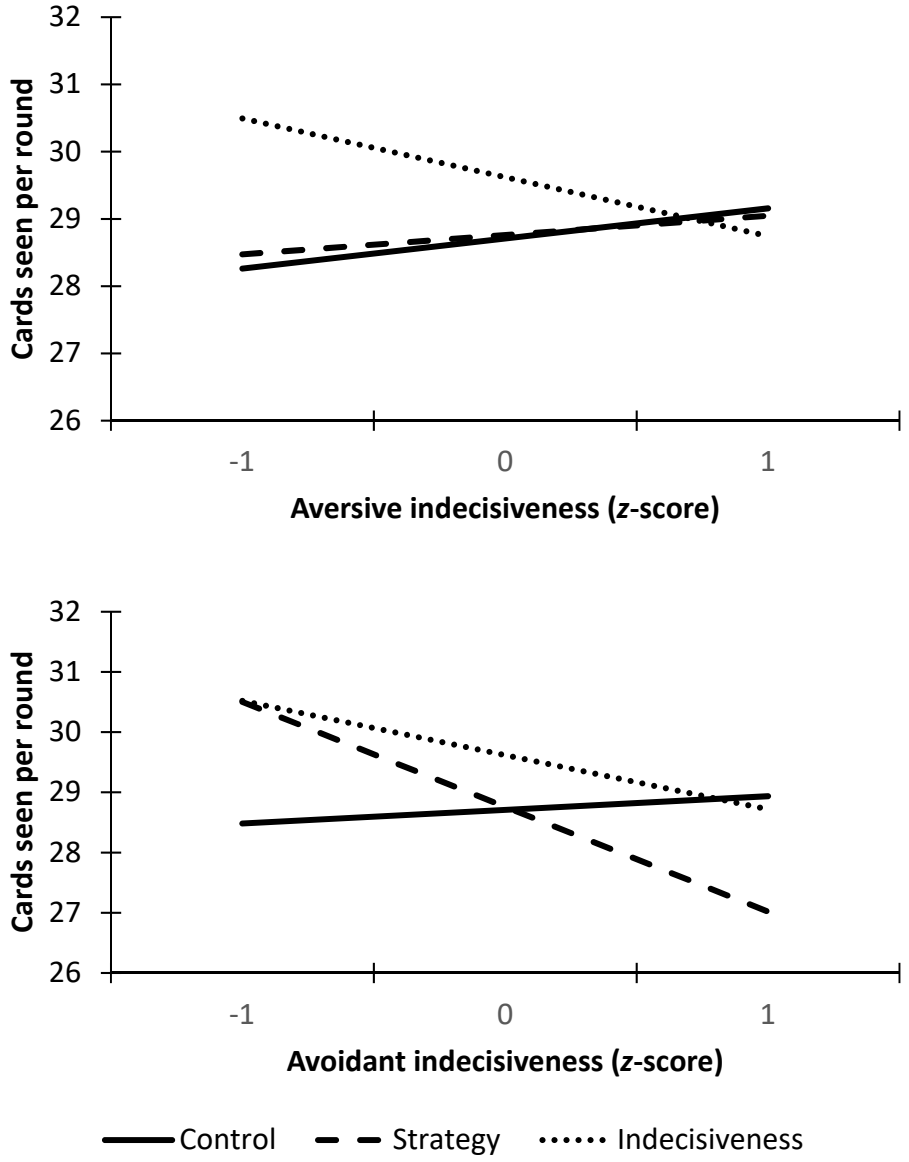


Figure 6.2. Mean number of cards seen per round in each attentional focus condition, at different levels of aversive and avoidant indecisiveness.

There was no main effect for aversive or avoidant indecisiveness on the total time before choice, although there was a significant interaction between the attentional focus condition and avoidant indecisiveness (F(2, 522) = 7.263, p = .001). Compared against the control condition, a shorter time to choice was observed in both experimental conditions — not only in the strategy-focus condition — with increasing

avoidant indecisiveness (strategy-focus: B = -.307, SE = .088, t(525) = -3.475, p = .001, $CI_{.95}$ = [-.480, .113]; indecision-focus: B = -.247, SE = .080, t(525) = -3.100, p = .002, $CI_{.95}$ = [-.403, -.090]). Unexpectedly, avoidant indecisiveness predicted a greater proportion of active time in the indecisiveness-focus condition compared with the control condition (F(2, 522) = 3.926, p = .020; B = .048, SE = .017, t(525) =2.785, p = .006, $CI_{.95}$ = [.014, .081]). This was in the opposite direction to the main effect observed in the strategy-focus condition as reported above.

Avoidant indecisiveness also predicted lower levels of self-reported indecision, but only when indecision was primed through the experimental manipulation (F(2, 462) = 4.006, p = .019; B = -.533, SE = .188, t(465) = -2.830, p = .005, $CI_{.95}$ = [-.903, -.163]). This, too, is consistent with the hypothesised dissociative effect of avoidant indecisiveness in relation to the experience of decision-making. An interaction between avoidant indecisiveness and the attentional focus condition was observed for self-reported impatience at the end of the game (F(2, 127) = 4.533, p = .013, η_p^2 = .067). Participants' impatience at their own decision-making ability was positively associated with avoidant indecisiveness, but only in the strategy-focus condition compared against control (B = .721, SE = .364, t(130) = 1.980, p = .049, $CI_{.95}$ = [.001, 1.441]).

Aversive indecisiveness. A less distinct pattern of results was observed for aversive indecisiveness as a main effect and outside of the indecisiveness-focus condition. There were no significant main effects of aversive indecisiveness towards greater time to choice and number of cards seen, as was hypothesised. Aversive indecisiveness did predict more switching behaviour between decks across conditions (F(1, 521) = 12.394, p < .001; control: B = .344, SE = .100, t(524) = 3.435, p = .001, $CI_{.95}$ = [.147, .541]).

Aversive indecisiveness was also a strong positive predictor of self-reported indecision overall (F(1, 462) = 27.281, p < .001; control: B = .785, SE = .160, t(465) = 4.090, p < .001, $CI_{.95}$ = [.471, 1.099]). Similarly, aversive indecisiveness was associated with greater change in overall mood towards negative affect over the game (F(1, 127) = 5.932, p = .016, η_p^2 = .045; control: B = -.478, SE = .182, t(130) = -2.623, p = .010, $CI_{.95}$ = [-.838, -.117]). Finally, and as hypothesised, aversive indecisiveness predicted a negative change in perceived energy levels over the game, representing a greater sense of fatigue (F(1, 125) = 13.769, p < .001, η_p^2 = .099; control: B = -.659, SE = .213, t(128) = -3.093, p = .002, $CI_{.95}$ = [-1.081, -.237]).

Confirmation bias. There was no evidence of confirmatory information seeking in the game. On both the time and events measures, participants did not prefer the eventually-selected deck in a way that could be explained by the attentional condition, indecisiveness or their interaction. Rather, as seen in Table 6.1, participants generally sampled evenly from both decks before making a selection.

Self-Presentation Indecision and the Appearance of Decisiveness

The hypotheses about self-presentation indecision predicted that the combination of indecision focus and higher levels of aversive indecisiveness would increase the tendency for participants to try to appear decisive. Dispositional levels of aversive indecisiveness predicted the extent to which participants felt impatient over their own decision-making ability throughout the game ($F(1, 127) = 18.124$, $p < .001$, $\eta_p^2 = .125$; control: $B = .877$, $SE = .268$, $t(130) = 3.272$, $p = .001$, $CI_{95} = [.347, 1.408]$). The presence of such impatience would form a requisite condition for self-presentation indecision, although this effect was independent of attentional condition and not limited to the indecisiveness-focus condition.

Behaviours consistent with self-presentation indecision were found on several measures in the indecisiveness-focus condition. For instance, higher levels of aversive indecisiveness was associated with fewer number of cards seen in the indecisiveness-focus condition compared with the control condition ($F(2, 522) = 3.912$, $p = .021$; $B = -.280$, $SE = .102$, $t(525) = -2.759$, $p = .006$, $CI_{95} = [-.479, -.081]$). This effect was in the same direction as the previously described effect of avoidant indecisiveness in the strategy-focus condition, as previously shown in Figure 6.2, which again is contrary to the usual behaviour predicted by aversive indecisiveness.

As mentioned earlier, the indecisiveness-focus condition was not associated with greater time taken to choose a deck. Nor was there a direct effect of aversive indecisiveness ($F(1, 522) = 1.026$, $p = .312$, *ns*) or an interaction with the attentional focus condition ($F(2, 522) = .945$, $p = .389$, *ns*). However, aversive indecisiveness was associated with a lower proportion of active time in the indecisiveness-focus condition compared with the control condition ($F(2, 522) = 3.983$, $p = .019$; $B = -.042$, $SE = .018$, $t(525) = -2.314$, $p = .021$, $CI_{95} = [-.078, -.006]$). This resembled the main effect of the strategy-focus condition and was the opposite of the relationship between avoidant indecisiveness on active time in the indecisiveness-focus condition.

Although aversive indecisiveness was a positive predictor of self-reported indecision ($F(1, 462) = 27.281$, $p < .001$), this effect was significantly attenuated in the indecisiveness-focus condition compared with the control ($B = -.482$, $SE = .202$, $t(465) = -2.386$, $p = .017$, $CI_{.95} = [-.879, -.085]$; $F(2, 462) = 3.151$, $p = .044$). This finding is consistent with the attempt for a more positive portrayal of the self as a decision-maker in the face of a salient indecisive identity. Moreover, aversive indecisiveness was associated with a decrease over the game in the reported intensity of emotions, but only in the indecisiveness-focus condition ($F(2, 127) = 9.599$, $p = .028$; $B = -.880$, $SE = .345$, $t(130) = -2.554$, $p = .012$, $CI_{.95} = [-1.563, -.198]$). This result indicates that active emotional suppression is occurring when aversively indecisive participants are directed to their own experience of decision difficulty.

Decision Quality

Next, game performance was examined in terms of decision quality, measured objectively as participants' selection of the better deck and subjectively as perceived performance. Using a binary logistic model in a GLMM, the attentional focus condition did not independently predict decision quality ($F(2, 520) = 1.025$, $p = .359$, *ns*). However, there was an interactive effect of avoidant indecisiveness and the attentional focus condition on whether participants chose the better deck ($F(2, 520) = 3.992$, $p = .019$). Levels of avoidant indecisiveness had little overall effect on decision quality in the control and strategy-focus condition. Indeed, in the strategy-focus condition, avoidant indecisiveness was associated with marginally objective performance (especially if compared with the indecisiveness-focus condition: $B = .622$, $SE = .230$, $t(515) = 2.703$, $p = .007$, $CI_{.95} = [.170, 1.075]$). Avoidant indecisiveness, however, clearly predicted worsened performance in the indecisiveness-focus condition. For each standard deviation unit increase in avoidant indecisiveness, participants in the indecisiveness-focus condition had 2.3 times the odds of choosing the *worse* deck than those in the strategy-focus condition ($CI_{.95} = [1.271, 4.033]$; $B = -.817$, $p = .006$, $CI_{.95} = [-1.395, -.240]$).

There was no effect of aversive indecisiveness on objective performance independently or in an interaction with the attentional focus condition ($F(2, 520) = .716$, $p = .489$, *ns*; $F(1, 520) = 2.205$, $p = .138$, *ns*). However, looking beyond the outcome measure of performance, higher levels of aversive indecisiveness was associated a longer proportion of "active" time viewing the values of cards on the better deck relative to the worse deck, but only in the indecisiveness-focus condition relative to

control ($F(2, 522) = 5.156$, $p = .006$; $B = .119$, $SE = .038$, $t(525) = 3.059$, $p = .002$, $CI_{.95}$ = [.043, .196]). This extra time better deck had no effect on participants' subsequent choices, as discussed.

Actual decision quality did not mirror participants' perceptions of their game performance. A main effect of the attentional focus condition was observed on the self-report measure of performance ($F(2, 462) = 5.354$, $p = .005$). Better perceived performance was reported by participants in the indecisiveness-focus condition independent of indecisiveness ($M = 4.286$, $SE = .084$, $CI_{.95}$ = [4.121, 4.450]), which was significantly higher than in the control condition ($M = 3.920$, $SE = .097$, $CI_{.95}$ = [3.730, 4.110]; contrast estimate = .366, $SE = .141$, $t(462) = 2.864$, $p = .013$, $CI_{.95}$ = [.059, .673]).

Avoidant indecisiveness was associated with lower perceived performance ($F(1, 462) = 14.900$, $p < .001$) across all conditions (e.g., control condition: $B = -.260$, $SE = .091$, $t(465) = -2.846$, $p = .005$, $CI_{.95}$ = [-.439, -.080]), notwithstanding the increase in objective performance observed in the indecisiveness-focus condition. Avoidant indecisiveness was also associated with lower perceived confidence in participants' ability to making good decisions across the entire game, independent of the attentional manipulation ($F(1, 124) = 6.209$, $p = .014$, $\eta_p^2 = .048$; control: $B = -.486$, $SE = .227$, $t(127) = -2.062$, $p = .041$, $CI_{.95}$ = [-.917, -.019]).

The effect of aversive indecisiveness on self-reported performance depended on the attentional focus condition ($F(2, 462) = 4.442$, $p = .012$). Despite the lack of any predictive effect on actual decision quality, there was a positive relationship between perceived performance and aversive indecisiveness in the control condition ($B = .232$, $SE = .100$, $t(465) = 2.313$, $p = .021$, $CI_{.95}$ = [.035, .428]). The reverse was observed in the experimental conditions (strategy-focus: $B = -.305$, $SE = .150$, $t(465) = -2.034$, $p = .043$, $CI_{.95}$ = [-.599, -.010]; indecision-focus: $B = -.371$, $SE = .127$, $t(465) = -2.924$, $p = .004$, $CI_{.95}$ = [-.620, -.122]).

Discussion

Attentional Focus

There was a limited direct effect of the attentional focus condition on game behaviour and experience, but this was not entirely unexpected. A clearer pattern of differences emerged between the experimental conditions against the control condition. That is, both the strategy-focus and indecisiveness-focus conditions behaved similarly

on some variables in producing more approach-orientation behaviour in the game compared with the control condition. This was only observed for the total time to choice and the number of switches between decks in each round. There was no effect on the total number of cards seen, decision quality or most of the self-report items.

Setting aside for now the decision-maker's actual motivations in the game, the results suggest that a threshold level of engagement with the game as a decision-making situation is needed for indecision to occur. That is, a decision must captivate the person as a decision-maker in order for the functional motivations of good decision outcomes, good decision-making and being a good decision-maker to be relevant, and also to become obstructed. The importance of this decision salience or "decisionality" was previously discussed in Chapter 3, and was also observed in Study 2 where the unexpectedly low levels of arousal and stress in the CDT produced also unexpectedly small effects on indecision behaviour.

The results from this study suggest that this salience can be attained by drawing the decision-maker's attention to any aspect of the decision-making activity. It did not matter, on the relevant variables, whether participants were directed to the decision-making strategy towards achieving good outcomes, or their own experience of difficulty as a decision-maker. As a default response, this decisional salience prompts stimulus-directed engagement and therefore indecision behaviours in the same direction ((i.e., greater time and activity). However, this position can be modified by individual differences or the situational context and experience of the decision-maker, as will be discussed below.

Given the importance of decision appraisal as a threshold construct, this study also provides some insights about what happens when a person is thrust into a decision-making situation in the absence of this decisional activation. Participants in the control condition reported a greater diffuse and non-concrete felt sense of difficulty in the task, rather than knowing the source of the difficulty. In other words, the attentional direction in the experimental conditions may have created not only a role for the decision-maker, but a reason and rationalisation for the experience of indecision. Without this role and explanation, indecision becomes all the more perplexing because the motivations of the decision-maker are not readily accessible. This may account for the significantly sharper decline in mood observed over the game for participants in the control condition compared with the experimental conditions. It also suggests that decision-making without context and motivation can create a unique kind of distress,

one which is yet to be fully recognised in the indecision literature, or even in the current functionalist model.

Indecisiveness and Indecision Behaviours

Aversive indecisiveness. As a general principle, aversive indecisiveness was associated with more approach-based indecision behaviour (i.e., towards increased latency and information search) and heightened self-report. However, this was not a universal phenomenon: approach-oriented indecision behaviour was only observed on some variables. For instance, while aversive indecisiveness did not affect the total number of cards seen per round, it was associated with a greater number of switches between the decks during the sampling. In the absence of an any change in the total number of cards seen, this suggests that aversive indecisiveness led to more prevarication behaviour, with a larger proportion of the decision time spent swapping between decks.

Aversive indecisiveness had the hypothesised influence on the recalled experience of being a decision-maker. There were sizable positive associations between aversive indecisiveness and reported indecision, impatience at one's own decision-making ability, and lowered mood and increased fatigue over the game. These findings are all consistent with the characterisation of aversive indecisiveness as relating to a sensitivity to negative affect and fear of being unable to fulfil the different concurrent goals of decision-making. This was then expressed in greater agitation, decisional restlessness and expenditure of emotional energy.

Aversive indecisiveness was also related to perceptions of worse performance on the game in the two experimental conditions, even though actual decision quality was not directly impaired. This dissociation between perceived and actual performance points to an anticipatory sensitivity to errors and invalidation and a negative encoding and recall of decisions as negative events. The reverse finding was observed in the control condition, with aversive indecisiveness being positively related to levels of perceived performance. This might be explained by the need for more rationalisation of the difficulty and struggle experienced in an apparently meaningless task. Participants may be relying on a higher perception of their performance to make sense of their experience of indecision. Such a finding is reminiscent of classic studies on the role of cognitive dissonance in shaping the meaning of uninteresting tasks in which participants had complied with directions (Festinger & Carlsmith, 1959).

There was no evidence of confirmatory informational "tunnel vision" predicted by aversive indecisiveness (cf. Rassin et al., 2008). On the whole, participants sampled in a balanced way and did not seek out more information from the deck which they selected as the better one. Nor did participants spend longer on the eventually-chosen deck. These findings add to the mixed results of Study 2, where confirmatory search was only predicted by aversive indecisiveness in the CDT in the presence of greater selection difficulty. It may be that the sampling game in this study lacked the opportunity for attribute-based comparison and preference formation. Confirmatory search could be grounded in this kind of difficulty, rather than just the demand of keeping track of payoff values. While further investigation is needed to examine this possibility, the lack of significant results in this study nonetheless supports the general conclusion that confirmatory information seeking is not an inherent part of indecision.

Avoidant indecisiveness. A more consistent effect on withdrawal behaviour and dissociation from experience was observed for avoidant indecisiveness, with some evidence that this was amplified in the strategy-focus condition. For instance, while avoidant indecisiveness predicted that participants would sample fewer cards before choosing a deck across all conditions, the suppression of sampling was particularly strong in the strategy-focus condition. On the other hand, greater avoidant indecisiveness was similarly associated with a shorter time to choice in both experimental conditions.

Avoidant indecisiveness, unlike aversive indecisiveness, had a direct effect on decision quality. The direction of this effect was dependent on the experimental condition. In the control and strategy-focus conditions, avoidant indecisiveness did not affect objective performance. Instead, there was some limited evidence of increased performance associated with avoidant indecisiveness in the strategy-focus condition, even though the decision time and the extent of search was suppressed. These findings add to the results of Study 2. The increased performance in the strategy-focus condition is consistent with the adaptive drive behaviour in the LDT which led to better performance for participants higher in avoidant indecisiveness. In these cases, decision outcomes may actually be improved and the decision-making process made more efficient by this form of indecisiveness, even if the decision-making experience remains dissonant with the self and is an undesirable source of threat.

However, in the indecisiveness-focus condition, higher levels of avoidant indecisiveness had a significantly deleterious effect on objective performance. Importantly, this harmful effect on outcomes was observed only where the

indecisiveness of the decision-maker is salient and threatening, as opposed where the decision-making process and the attainment of goals and outcomes is the object of focus.

Despite performance being unaffected, or even improving, with greater avoidant indecisiveness in the control and strategy-focus conditions, participants seemed unaware of this and reported the opposite perception. Avoidant indecisiveness was associated with lower perceptions of performance across all conditions. Assuming that participants equated decisional performance with good decisional outcomes, this result suggests that avoidant indecisiveness produced an overgeneralised negative belief about the participant's ability to attain good outcomes. This finding further supports the notion that avoidant indecisiveness is associated with an increased psychological distance between the self as decision-maker and the desire and ability to attain desired outcomes.

Nevertheless, some care is needed when interpreting the selection of the better or worse deck as a measure of decision quality at an individual level. Firstly, other influences which may affect the ability of participants to evaluate the payoff values. In relation to the present card game, these include individual differences in short-term memory and executive functioning, and numerical reasoning and problem-solving ability. These variables, which would also be the predictors of outcome indecision, have not been considered empirically in this project. While these individual differences are assumed to be normally distributed across the sample, further research is needed to account for these traits and explore their effect on indecision of all three kinds.

Self-Presentation Indecision

In addition to these general approach and avoidant expressions of process indecision, the combination of the indecisiveness-focus condition and aversive indecisiveness was hypothesised to create favourable conditions for self-presentation indecision. While evidence of this was found, it is important to be clear that this is not the only possible antecedent to self-presentation indecision. It was merely the most likely conjunction of trait and state within the present design to elicit this form of indecision. Self-presentation indecision was identified in the study by behaviours and reported experiences which reversed or attenuated the standard effect of aversive indecisiveness towards greater time, engagement and reported intensity of experience.

Evidence for self-presentation indecision was observed on a number of variables. This was particularly so for the overt, controllable, and possibly stereotyped dimensions of indecision behaviour, such as restricting the number of cards seen and spending less

time in active information search. Self-reported also indecision decreased as aversive indecisiveness increased, which is the opposite of the usual effect observed where participants' indecisiveness is not directly in the foreground. Similarly, there was a unique inhibition of affective intensity with increasing aversive indecisiveness which would not otherwise be expected. This could be because the emotional experience of indecision was successfully masked and then truthfully reported. Alternatively, a lower level of emotional response may have been reported as a more socially desirable presentation of the self as decision-maker. Further work is needed to distinguish the two, but both are consistent with an attempt to look more decisive and less indecisive in a dysregulated way.

This expression of self-presentation indecision was not found to impair decision quality directly in the study. However, aversive indecisiveness was associated with participants in the indecisiveness-focus condition being attracted to the better deck and spending more time viewing these payoff values, even if they did not ultimately make the better choice. The impairment to decision quality may come in the form of unrealised potential from the increased effort rather than active errors. The hesitation, second-guessing and misdirected attention, which may now be part of process indecision, may impair the possibility of not only arriving at a good decision outcome, but also doing so in an efficient and well-regulated way.

It is also noteworthy that the effect of the interaction between aversive indecisiveness and the attentional focus condition occurred on top of significant main effects in the other direction. This suggests the presence of conflicting motivations which can lead to different and opposing expressions of indecision.

Limitations and Extensions

Just like the previous studies, there is room for replication and extension of this study, as well as a re-analysis of the present data using different methods. For instance, within-game changes in behaviour or experience have not yet been explored, with data being aggregated across all four rounds of the game. Time series and other analyses may provide meaningful data about not only what indecision looks like and what predicts it, but *when* it occurs and how long it lasts. Like Patalano et al.'s (2009) study, future work could seek to identify and measure changes in search strategy during the decision-making task and the motivations for doing so, as predicted not only by multiple forms of indecisiveness but also concurrent indecision processes.

The random stopped sums model, described in Study 2, could also be applied to these data to look at the joint effect of time and information seeking. Indeed, Smithson & Shou (2014) also analysed an earlier version of these data (with a different factor structure for the indecisiveness items) as a proof of concept of their newly-developed method.

Qualitative or mixed-method analyses of participants' reported expectations and experiences in the game would also be a fruitful source of information. Coding participants' responses to the pre-task attentional induction question would provide useful data about motivations and anticipated experiences in relation to being a decision-maker. Participants' reflections about their experience of playing each round of the game would also be informative process data as (reconstructed) explanations of how they were engaging with the decision and decision-making role. Examining how participants' accounts changed over the four rounds of the game would complement the behavioural analyses about the emergence of decision and would provide insights into any disjunctions and lags between indecision behaviour and the narrated experience of indecision.

Like in Study 2, there are some residual questions about whether the game was sufficiently stressful, particularly to elicit the aversive or dysregulated aspects of process indecision. One limitation in the method was that there was no cost to sampling from the two decks. The experiment was initially designed with another within-subjects factor which would have compared costly with costless sampling. This was not included in the present study due to sample size and power restrictions. Costly sampling would have been operationalised by using applying a decay function to the payoff value for each card in that round. Participants would only discover that sampling was costly through the repeated act of sampling itself. This untested extension to the design was hypothesised to increase the stress and difficulty of the game, as well as provide an opportunity to examine how a sensitivity or insensitivity to risk affects indecision as currently conceptualised (Patalano & Wengrovitz, 2007).

Moving beyond the present experimental paradigm, future studies may wish to test the effect of a non-decisional prime condition as an alternative to a control condition which is still set within the context of a decision-making task. That is, in addition to inducing the salience of decision strategy or indecisiveness, the same task could be reframed as something other than a test of decision-making (Halevy & Katz, 2013; Tetlock, 2002; Halkjelsvik & Rise, 2015). Removing the anticipation of decision-making and indecision as much as possible would be expected to provide a

different baseline from which the effects of indecisiveness and other experimental manipulations on indecision could be evaluated.

Unlike other studies using a money-machine game, the DFE paradigm was not used as a contrast to a decision-from-description (DFD) problem, where all the relevant choices, payoffs and probabilities are known *a priori*. The focus of this study, within the functionalist model of indecision, was on the event of deciding, which is inherently an experience-based and dynamic activity. However, there is room to follow the other DFE research and, for instance, explore whether the description-experience gap in risky choice (Hertwig & Erev, 2009; Camilleri & Newell, 2013) affects the emergence of indecision. It would be expected that DFD problems minimise some of the performative and process-oriented dimensions of being a decision-maker and therefore the conditions for process and self-presentation indecision. Instead, the role of outcome indecision would be expected to be more dominant.

Ahead

At this juncture, it is prudent to review and update the theoretical model of indecision in light of the results of this study and the previous two studies. Many of the results here are predicated on earlier findings and assumptions, such as the structure of the indecisiveness factors. These assumptions, and some of the methodological weak spots previously identified, should be subject of ongoing development and revision. The model being advanced here should not be constrained by the legacy of older studies developed in the context of a different understanding of indecision and indecisiveness. Nonetheless, as this study, like Studies 1 and 2, have provided broad support for the functionalist model, it is appropriate now to turn to this integration of evidence and theory in the following general discussion.

CHAPTER 7:
GENERAL DISCUSSION

This chapter returns to evaluate the functionalist approach to indecision and indecisiveness first set out in Chapter 3. Having investigated the nature of indecisiveness, the expression and predictors of indecision and the relationship between the two in the proceeding chapters, it is appropriate now to assess the strength of the evidence in developing a coherent theory of indecision and indecisiveness, as well as to identify directions for further theoretical development and empirical inquiry.

Review of Model

The model in Chapter 3 was introduced as a response to the limitations and problems with how decision difficulty has been conceptualised and measured to date. This model sought to shift the focus of decision difficulty away from the content of the decision to the decision-maker. A functionalist model is a motivational model; one which is interested in the motivations of the person as a deciding agent to meet certain adaptive challenges. The functional model is also a psychological one, which seeks to gives substance to both indecision and indecisiveness. This entails a corresponding shift away from the assumption that the dominant motivation of the decision-maker is to obtain the best instrumental outcomes through rational optimisation (i.e., the "intuitive economist" described by Tetlock, 2002). It instead begins by recognising that decision-makers are multiply-motivated: to attain good decision outcomes, to be good at the process of decision-making, and to be (and appear to be) good decision-makers. While these motivations are directed to adaptive goals, they are always not easily realised, especially when the demands of one motivation conflicts with another. This gives rise to different indecision processes.

The model therefore asserts that indecision can be expressed in different ways. This requires a disentangling of indecision behaviours from their underlying motivational goals and adaptive failures. This is a less controversial position than it may have first appeared. After all, the characteristics of indecision widely recognised in other reviews, as discussed in Chapter 2, feature a range of behaviours which are inconsistent with each other. Indecision, for instance, might involve seeking out more information and requiring more time to choose. Yet indecision might also involve narrowing one's range of search and making a hurried choice to bring an end to the decision. These behaviours can only be understood through their underlying

motivations. Indecision must therefore be thought of not as a distinct binary state but as concurrent dimensional processes.

Rather than being tied to the frequency of indecision, indecisiveness can be characterised as a set of attentional and anticipatory processes which precede and sensitise people to appraisals of decisions and decision-making. Informed by preliminary previous attempts, the model embraces the multidimensionality of indecisiveness. Two broadly opposing but concurrent dimensions, aversive indecisiveness and avoidant indecisiveness, were included in the model, representing two aspects of individual difference in the anticipation and response to decision-making. This distinction was borne out across the three studies.

Key Findings

Indecisiveness

Multidimensionality. All three studies provided strong support for the position that indecisiveness is not one construct, but several related constructs. Before addressing the different dimensions of indecisiveness, this finding of multidimensionality is itself of conceptual importance. The results challenged two narrow motivational assumptions which were previously discussed as having limited the development of theory and research about decision difficulty. The first assumption is that indecisiveness is unidimensional: that it is an undifferentiated experience of difficulty with decision-making primarily tied to the frequency of indecision. The results of the studies showed otherwise. The composite indecisiveness scale comprising of the IS-R and PFIS was clearly reducible into three dimensions in Study 1, interpreted as aversive, avoidant and ruminative aspects of indecisiveness. This factor structure was validated in Studies 2 and 3, and will be discussed below.

The second assumption was that indecisiveness has a monotonic influence on decision-making behaviour. In this assumption, the relationship between indecisiveness and behaviour is characterised only in terms of approach and engagement behaviours, typically increased decision latency and information search. The results were inconsistent with this assumption. Indecisiveness predicted not only approach behaviours but also avoidant behaviours and processes, which were expressed as reduced time, search and personal involvement. However, this effect is mediated through state-based indecision processes.

That is, it is also no longer possible to sustain the common practice of referring to indecisiveness and indecision interchangeably. While the trait and state distinction has long been maintained at a conceptual level, there was often no practical consequence of differentiating between them in terms of measurement. The results of the present studies therefore force a proper recognition of the difference between dispositional and situational components of decision difficulty.

Distinct motivations. The two dimensions of conceptual and empirical interest — aversive and avoidant indecisiveness — were examined across the three studies. These two forms of indecisiveness were theorised as contrasting dispositional inclinations generally towards or away from the activity of deciding, respectively. The labels of aversive and avoidant indecisiveness were derived from Spunt et al.'s (2009) study, but take on a different interpretation because of a different set of item-factor loadings observed in Study 1. However, this does not amount to a repudiation of Spunt et al.'s (2009) results. Rather, the present studies showed that the IS-R alone was insufficient to account for the full breadth of indecisiveness, especially self-referential, experiential and affective items.

Spunt et al.'s (2009) results indicated the possibility of indecisiveness being multidimensional, but the interpretation of the factors as relating to avoidance and aversion stretched the boundaries of what was possible using the IS-R. Balancing this commonly used scale with the more social-cognitively oriented PFIS in Study 1 partially but pragmatically addressed these issues without the need for new scale development. This position of using a composite scale, however, should only be an interim step in the development of indecisiveness measures.

Across the three studies, avoidant and aversive indecisiveness had a bigger than expected effect on indecision behaviour and experience relative to the direct influence of the decision-making context or content. The results often hinged on the two usually opposing indecisiveness dimensions, such that at times there was more to say about indecisiveness than indecision. Given the centrality of this distinction, it is therefore important to interpret the two dimensions of indecisiveness in an appropriate and nuanced way.

Avoidant indecisiveness. A noteworthy, and initially unexpected, observation was that avoidant indecisiveness is closely aligned with approach-oriented motivations and a drive towards goals and outcomes. The sizeable association between avoidant indecisiveness and the BAS subscales in Study 1 (cf. Spunt et al., 2009) translated into appetitive decision-making behaviour in Studies 2 and 3. Avoidant indecisiveness

predicted increased performance and efficiency in the LDT in Study 2 and in the strategy-focus condition in Study 3. On the other hand, where the participant's indecision was brought to the forefront in one condition of the game in Study 3, decision quality was significantly impaired. The drive to pursue goals collapses when the participant was reminded of her or his own decisional incapacity and inability.

At the same time, and true to its name, avoidant indecisiveness was observed to predict the avoidance of the personal experience of decision-making. Decision-making as a psychological activity was appraised as a threatening way, where decisions were experienced as impairments to desired goals. This interpretation was pieced together from several sources. Firstly, in terms of the factor structure in Studies 1 and 3, there were strong loadings on items relating to not wanting to decide and having a low sense of agency and capability as decision-maker. However, this was not an entirely stable finding. Avoidant indecisiveness predicted lower perceptions of task performance in Study 3, but higher perceptions of performance in the LDT in Study 2 when under threat-related stress. These opposing results show again that there is a tension between appetitive goals and the reluctance to take on the decision-maker role, depending on the nature of task and how this influences the appraisal of the decision.

The second line of evidence that avoidant indecisiveness sensitises people to threat-oriented appraisals of decisions comes from the correlations between avoidant indecisiveness and other personality measures in Study 1. Avoidant indecisiveness was not only positively correlated with goal-directed drive, but also a diffuse and unstructured way of attaining desired outcomes. The picture is one of desired but unobtainable goals, where the decision-maker is not able to use decisions adaptively to connect the present situation with an anticipated future. Avoidant indecisiveness thus resembles the situation of Buridan's Ass discussed in Chapter 1, where the irresolution only through the inability of the agent to impose some structure to the problem as a decision-maker.

Thirdly, all three studies showed that avoidant indecisiveness was associated with a marked dissociation from self-report measures of experience and affect. Avoidant indecisiveness predicted the suppression of both baseline and within-task positive affect. It was also associated with lower rehearsal, narrative construction and perceived accuracy of the autobiographical memory of the decision event in Study 1. This suggested that the memory of experience of being a decision-maker was either not strongly encoded, or that there is active difficulty or obstruction in the process of recall and identification with experience.

On other self-report measures across the studies, there was a distinct lack of responsiveness to different levels of avoidant indecisiveness. This was in sharp contrast with the usually strong positive correlation shown with aversive indecisiveness. Avoidant indecisiveness therefore represented a disconnection from the immediate emotional, cognitive and experiential dimensions of decision-making. Further supporting this, the effect of avoidant indecisiveness was not affected by the manipulation of self-regulatory status and the availability of immediate psychological resources or stress in Study 2. Similarly, avoidant indecisiveness was insensitive to the salience of indecision and indecisiveness in one condition in Study 3. When participants were primed to be aware of their own difficulty in making decisions, the resultant effect on behaviour and experience was not affected by this dimension of indecisiveness.

As a gestalt representation, desired but abstract goals dominate the foreground, while the person as a decision-maker and the concreteness of the decision activity are hidden away in the background. There is little connection between the two, leaving the risk of goals being unrealised. That is, the decision-making role is avoided because decision outcomes are valued or even over-valued. However, based on the evidence from the three studies, it should be made clear that the avoidance was of the experience of decision-making and the identity of being a decision-maker. It was not a general behavioural avoidance of the activity of deciding except to the extent it invoked the decision-maker role. That is, the avoidance of experience was finely balanced against the need for goal attainment. To this extent, avoidant indecisiveness can be distinguished from the pathological forms of reinforced behavioural avoidance observed in clinical presentations.

Such experiential avoidance may indeed have some adaptive value where decisions are not necessary or are inefficient as a means to an end. Decision-making, especially in the presence of choice abundance and limited psychological resources, may require disproportionate effort. An inclination to avoid choice and the psychological consequences of being a decision-maker, or to choose not to choose may be the better course of action. Avoidant indecisiveness may also help correct for biases such as the overestimation of agency in a situation (i.e., an illusion of control: Langer, 1975). It may also narrow the gap between the expected and actual effect of a decision, especially within a complex or resistive system (Denis et al., 2011). However, the adaptive possibilities of avoidant indecisiveness must be balanced against the other reasons why people choose: it is not only to arrive at a good outcome.

Aversive indecisiveness. Aversive indecisiveness, on the other hand, has the opposite gestalt. Here, the immediate self-aware experience of decision-making is privileged in the foreground. Longer-term consequences of the decision are not entirely absent, but reside in the background. In this way, aversive indecisiveness also has a threat-oriented component. However, unlike avoidant indecisiveness, the threat relates to the immediate experience of deciding. This is consonant with an underlying fear of invalidity (Thompson et al., 2001), where decision outcomes are salient to the extent that they create epistemological uncertainty and further invalidate the assumed world of the decision-maker (Beck & Clark, 2009).

Across the three studies, aversive indecisiveness consistently predicted a sensitivity to the conscious experience of negative affect during decision-making. Aversive indecisiveness was positively correlated with self-report questions about the intensity of the affective experience of feeling "stuck" during decision-making (Elaydi, 2006). However, whether there are specific emotions or categories of emotions which are unique to aversive indecisiveness still requires considerable further investigation, and must be examined through state-based indecision processes.

Further research would be helpful before concluding that aversive indecisiveness is associated with general negative emotion. There are a number of promising directions for experimental studies having now established the preliminary viability of measures and methods to examine the relationship between indecisiveness, indecision and its experience. However, some restraint would be needed so as not to overstep the mark and blur the boundaries between aversive indecisiveness and expressions of indecision. This would fall into the trap which the model seeks to avoid. It would be improper to search for a direct effect of indecisiveness on state-based emotion. As per the model, trait influences on affective experience must be mediated through indecision processes.

Nonetheless, a related consistent finding across the three studies was that aversive indecisiveness was positively associated with intensity of self-reported experience beyond the experience of indecision as the experience of being "stuck". This included the experience of difficulty, fatigue, self-consciousness and the vivacity of memory. A common thread across these items is that they relate to the recall of the performative aspects of the decision-making activity. The heightened anticipation of negative experience of decision-making also seems to be amplifying actual negative experiences. This may create a confirmatory loop where an inefficient direction of attention and psychological resources results in impaired performance or dysregulation,

as will be discussed later. Consistent with Patalano & Wengrovitz (2007), aversive indecisiveness also was associated with the front-loading of psychological resources, even if at the expense of longer-term performance and adaptive goals. This was demonstrated through the relationship between aversive indecisiveness and self-presentation indecision which was examined in Study 3.

Extending the model further, it may be necessary to examine how aversive indecisiveness gives rise to both approach and avoidant processes. Spending more time in a decision may be a side-effect of trying to inhibit and avoid the aversive experience of indecision. Alternatively, decisional delay and increased information search could be seen as protective engagement strategies in the midst of distress and depletion to "buy time" in order to attain the intended good outcomes of a decision.

As such, while avoidant and aversive indecisiveness have often been contrasted throughout the thesis, they are not strictly opposing counterparts in their effect on behaviour. There is an important intermediate layer of the decision-maker's appraisal of the decision situation and the contemporaneous demands and resources available in that context. Without this, the results from the studies showing that the same trait could have opposing effects on the expression of indecision would be far more difficult to explain.

Ruminative indecisiveness and beyond. A third indecisiveness factor, identified as ruminative indecisiveness, was extracted from the combined IS-R and PFIS scales in Study 1. This form of indecisiveness was not examined in Studies 2 and 3 for several reasons. Firstly, ruminative indecisiveness was not part of the theoretical model and no hypotheses had been made about it. Secondly, an examination of item-factor loadings in Study 1 suggested that the factor consisted of "leftover" items from the IS-R and PFIS which did not neatly map onto the other two factors. Comparing the factor analyses in Study 1 and Study 2, it was items relating to rumination and regret which moved in and out of the ruminative indecisiveness factor. This suggests that for now, as limited by the contents of the composite scale, this dimension of indecisiveness lacks sufficient construct validity.

Thirdly, the effect of ruminative indecisiveness in Study 1 often mirrored aversive indecisiveness but with a weaker effect. Without any clear differentiation between aversive and ruminative indecisiveness in terms of behaviour, experience or related traits, there was little merit in including this factor in further analyses. Further scale design efforts would be needed to develop a cleaner set of items which are relevant at a trait level, rather than be tied to specific indecision behaviours.

Moreover, the construct of ruminative indecisiveness must be based on theory. One conceptual possibility is to consider the temporal position of indecisiveness in relation to the decision. Rather than a sensitivity to anticipated or current decisions (in the case of avoidant and aversive indecisiveness), ruminative indecisiveness may well relate to post-decisional factors. It may, for instance, reflect individual differences in decisional decay or decisional closure, which is the extent to which one decision ends neatly and discretely, blurs into another decision, or lingers waiting to be re-enlivened. The relationship between indecision and rumination could also be explored further (Ward, Lyubomirsky, Sousa, & Nolen-Hoeksema, 2003; van Randenborgh et al., 2010). Exploring ruminative indecisiveness properly would require new experimental paradigms, which would give room for decisions to be unresolved or reopened and revisited.

As mentioned in Study 1, there is a need to revisit the source of items from which the three indecisiveness factors were identified. After all, the wide scope of decision-making activity from which the different motivational sources of indecision are drawn would not have been envisaged by the IS-R or PFIS. This extends beyond the possibility of including ruminative indecisiveness in the model. The three dimensions identified should not be considered exhaustive. On the other hand, while other dimensions which cannot be measured using the composite scale are likely to exist, there are also advantages of a parsimonious model which only captures the broadest dimensions of indecisiveness.

At this stage, this is the dichotomy between avoidant and aversive indecisiveness. With the possible addition of ruminative indecisiveness if supported by future data, there would be a mapping of dispositional influences across the temporal plane. A tripartite model of indecisiveness would then relate to the anticipation of future decisions (avoidant indecisiveness), the immediate negative experience of present decisions (aversive indecisiveness), and the (non-)closure of past decisions, or allowing decisions to move to the past (ruminative indecisiveness).

Decision Appraisal

The studies also supported the premise that decision appraisal (i.e., the appraisal of a situation as a decision) forms a boundary condition for indecision. There was, for instance, the uncontroversial finding from the pilot to Study 1 that that greater indecision was experienced at higher levels of decisions using Beach's (2010) taxonomy. In this categorisation, decisions pass from lower levels to higher levels

depending on the degree of discrepancy between the status quo and a forecasted future, moving from automaticity to focused attention and intention. Of course, asking participants to recall a recent instance of indecision meant that such event by their nature were not personally insignificant, and directly within conscious awareness and recall. There was nonetheless preliminary evidence of a relationship between the extent of greater "decisionality" and the presence of indecision. That is, decision appraisal should not be regarded as a binary precondition but as a continuum within which there is a threshold for subjective significance and therefore indecision.

The counterintuitive results from the LDT and CDT in Study 2 are also consistent with the importance of decision appraisal. While it had been expected that the repetitive LDT would be appraised as less of a decision-making task than the CDT, the reverse was observed. This may not have been due to the nature of the LDT, but because the CDT was appraised as less of a decision than had been intended. The lack of time pressure, the "sure win" outcome and the absence of losses may have prompted a lower level of decision-making appraisal, yielding less reactivity, self-regulatory demand and awareness of the self as decision-maker than even the LDT. Moreover, the limited decision appraisal in the CDT attenuated the direct effect of indecisiveness, especially when compared to the LDT. The presence of discrepancy and the demand for personal involvement as a decision-maker should therefore be considered as essential ingredients to elicit indecision and its dispositional correlates, particularly process and self-presentation indecision processes.

The card-sampling game in Study 3 was designed to combine elements of the LDT and CDT to increase the pressure and intensity of the decision-making activity. While this was only moderately successful, some observations about decision appraisal can be made from the comparison between the two experimental (strategy-focus and indecision-focus) conditions compared with the control condition. The absence of a focal point and benchmark for evaluating participants' experience of the task resulted in a unique and diffuse sense of decision difficulty and aversive experience not accounted for by process indecision or aversive indecisiveness.

One interpretation is that decision appraisal conveys meaning and provides context for a decision. Without such an appraisal, it is difficult to latch onto any of the three core motivations for decision-making. It also provides little basis for the decision-maker to impose a structure onto the problem and to exercise her or his will to resolve the irresolution. Such a situation where a person is thrown into a situation as a decision-maker without a reference frame or motivational self-reference may be less likely

outside the laboratory. Yet this phenomenon may be increasingly common given the abundance of imposed choice across neoliberal Western society.

Beach's (2010) narrative model of decision-making is therefore appealing as a basis for future work. Framing decisions as different levels of self-narrated discrepancies which are departure points from one's present reality adds another point in the decision-making process which may inform the development of indecision. The absence of a coherent narrative, and the resultant effortful and forced construction of narrative may also inform the identification of aspects of indecision even before the information evaluation and choice process. A starting point for this work may be to extend Study 3 by examining different kinds of task induction on decision appraisal. In addition to making different aspects of the decision-making task salient, other ways of framing the task, including as a non-decisional activity, could be trialled to examine their effect on motivation and indecision.

Indecision Processes

Another aim of the three studies was to test parts of the model by attempting to elicit the three indecision processes. As noted in Study 3, this was not an easy thing to do. This was partially because of the functionalist nature of the model. While other studies could assume a direct connection between a situational trigger and behavioural expressions of indecision, this is inconsistent with the model, where it is necessary to address the motivations of the decision-maker first. Without this artificial advantage of simplicity, one way of eliciting indecision was to operationalise the motivations. For instance, Study 2 manipulated self-regulatory capacity, the nature of the decision-making problem, and the content of decision. Study 3 tried to directly prime different aspects of the decision-making role.

The indecision processes (as opposed to indecision behaviours) also could not be measured directly. Once again, measurement in the studies was indirect and piecemeal. Indecision processes were inferred from behaviour in the presence of motivational indicators and dispositional influences. This approach not without its problems. It is, admittedly, not unlike the process of reverse inference previously criticised in Chapter 1, where researchers reach conclusions about mental states and intentions based on choice behaviour. This had been considered problematic for a psychological model of indecision, as limited observations of behaviour are fitted to a narrow notion of rationality ignoring other motivations for choice and being a decision-maker. This is partially addressed by the present studies, which intentionally looked at a much wider

range of decision-making behaviours and experiences, and therefore embodied a less confined understanding of rationality.

Nonetheless, some reverse inference may be inevitable, as is the case for much psychological research. It may be more permissible at this initial stage of empirical validation, but care must be taken so that the conceptual and methodological assumptions made do not dictate subsequent inquiry. Mistaking the map for the terrain and creating further surrogates for theory would be an undesirable outcome of the present project.

Outcome indecision. Examining outcome indecision was not a key focus of this thesis. There is already a wide-ranging body of research in the JDM field about difficulties and problems in decision-making which are attributable to the content or framing of the decision problem. Nevertheless, the use of behavioural decision-making tasks meant that it was inevitable that some degree of outcome indecision was involved.

The studies were initially planned to account for outcome indecision (vis-à-vis other indecision processes) by including manipulations of decision content in structured ways informed by previous research. This was subsequently scaled down as the role of indecisiveness became more apparent, also increasing the complexity of designs and analyses. Some manipulations, however, remained. For instance, the similarity of the choice set was manipulated in the CDT in Study 2, with the aim of making the choice of a charity more difficult or less difficult (Rassin et al., 2008; Rassin, 2007; Tversky & Shafir, 1992). This manipulation was less clear-cut than had been expected based on other studies. There was an expected difference in self-report between the two conditions, but the congruency between difficulty and the decision-maker's appraisal of the task was a better predictor of behaviour and experience.

Even with limited data about outcome indecision, these results are consistent with the model's predictions that indecision is less content-dependent or situationally-dependent than standard JDM models may expect. The content of a decision cannot be separated from the decision-maker's appraisal and motivations. As Mochon (2013) came to recognise when identifying the single-option aversion effect, the psychological world of the deciding agent must be considered.

Nonetheless, there are two other areas beyond the scope of this project where further exploration of outcome indecision would be helpful. The first is the relationship between outcome indecision and other indecision processes, including the possibility that outcome indecision is influenced by process or self-presentation indecision, and not only the other way around. Such a study could examine how process and self-

presentation factors change the framing of content or invoke other cognitive heuristics and biases which affect the difficulty of choice. The second possibility for further investigation would be to integrate findings about individual differences which are predictive of outcome indecision with what is now known about dispositional indecisiveness. The extent, for instance, to which aversive and avoidant indecisiveness may be related to cognitive or executive abilities (e.g., reasoning, working memory) has not been addressed in the present studies but would benefit from further study.

It should also be mentioned that the present studies contained other data potentially relating to outcome indecision which were not examined here but could be revisited. These include differences between words and pseudowords and different frequency sets of words in the LDT in Study 2.

Process indecision. More attention was given to process indecision in the studies. This form of indecision, which occurs during the activity of decision-making, arises because of the motivation to manage and regulate the performative and agentic dimension of decision-making in a way which is minimally taxing on psychological resources. Importantly, this dimension of indecision recognises that decision-making takes place amongst other competing demands and under limited psychological resources. As such, two adaptive threats can occur to give rise to process indecision: the actual or anticipated psychological incapacity to carry out the function of being the decision-maker, and the conscious experience of this incapacity or difficulty.

The latter — the negative affective experience of deciding — was examined throughout the three studies. The qualitative data in Study 1 and subsequent quantitative measures of emotional and autobiographical memory about experiences of indecision supported Elaydi's (2006) description of indecision as a feeling of being "stuck" and dysregulated during a decision. Being within conscious awareness, it was appropriate to inquire about such experience directly through self-report questions about affectively-driven "stuckness", which were included throughout Studies 2 and 3. Other measures, including pre-post change measures of self-reported energy, attention and emotion (Study 3) were also used as proxy measures for the presence of process indecision as aversive experience.

One limitation of the present research was that there was limited direct elicitation of process indecision in the studies. This was partly because of the model itself, as mentioned earlier. It was also because there was limited guidance on how to elicit process indecision, even indirectly. Process indecision has mostly been included as part of the measurement of indecisiveness, where a retrospective judgment is made

about the frequency and intensity of one's own experience of indecision. Measuring process indecision during an experiment, and doing so decoupled from the standard behavioural indicators, was therefore novel.

Nonetheless, an attempt was made in Study 2 to make process indecision more likely through the design of the CDT, and to measure this behaviourally as well as by self-report. The experimental manipulation of self-focus was intended to draw attention to the process of deciding. While self-reported indecision was indeed greater in the high self-focus condition, participants' behaviour was predicted by an interaction of both the content and the self-focus manipulation. That is, process indecision also depends on outcome indecision. The congruence or incongruence between content and process demands was posited something worthy of further consideration, with some evidence that this match or mismatch predicted either engage or withdrawal indecision behaviour. However, the implications of these results are unclear given the low decision appraisal of the CDT and the absence of any effect of the experimental manipulations on HRV. Self-reported experiences of indecision also varied with contextual and task demands, with the overall pattern of results showing that self-report measures are a useful, but incomplete measure of felt indecision.

The low average self-reported intensity of process indecision from both experimental studies was a problem for testing the model. Mean self-reported scores were around the midpoint of the scale, which was less than had been anticipated. Future work would benefit from more consciously stressful tasks, which may need higher levels of decision discrepancy in Beach's (2010) taxonomy. It is also important that process indecision is not limited to felt experience. To do so would be to reduce it to an outcome, rather than to affirm it as a process. How the experience of being "stuck" shapes decision-making and other indecision processes also remains to be examined in detail.

The second aspect of process indecision is the self-regulatory capacity of the decision-maker to meet the demands of the decision. Process indecision, in other words, is also a function of baseline self-regulatory resources and their depletion or restoration over time. The decision-maker's appraisal of whether they have sufficient resources for the decision activity results in either a challenge or threat form of stress, respectively. As such, Study 2 was intended to place participants under stress to explore this aspect of process indecision. While the results were unexpected, some insights into process indecision can still be derived.

Importantly, the study showed that self-regulatory exertion or depletion was separable from the conscious experience of aversive indecision. Self-regulatory capacity and change seemed to remain largely outside of consciousness. There were, for example, virtually no associations between changes in HRV and self-report measures of indecision on either the LDT or CDT. Self-regulatory capacity, as measured by individual differences in baseline HRV, was also negatively predicted by aversive indecisiveness. As this necessarily precedes the decision activity itself, incapacity-based process indecision may occur in an already-depleted decision-maker who has no or limited conscious awareness of her or his depletion. How this is later experienced and rationalised, however, would be worth investigating. Moreover, the effect of task order on defensive stress or positive exertion in Study 2 was also observed independent of experienced indecision. As such, while self-regulatory demands and experienced indecision may often coincide, they have been shown to be psychologically separate processes.

In addition, Study 2 showed that the self-regulatory aspect of process indecision was not only responsive to the demands of the specific decision task, but also appeared to be adapted to the anticipated demands of the entire study in terms of the differential and dynamic allocation or conservation of resources. As reported earlier, there was a failure to observe self-regulatory depletion in the CDT after making multiple rapid choices in the LDT, as hypothesised. Instead, the results showed that finding that self-regulatory variability was only observed in the LDT. This suggests that resources may be conserved and allocated to the expected decisional target (the CDT).

Where there is a mismatch between immediate situational demands and the expected allocation of resources (i.e., completing the LDT when expecting to do the CDT), this may trigger a defensive and stressful regulatory mode, while conversely, resources may be freely released following the resolution of expected demand (i.e., LDT after the CDT). This finding points to the broader self-regulation and management of psychological resources beyond an immediate decision, which is consistent with the model's depiction of the diachronic decision-maker balancing multiple goals and challenges across different time horizons.

These results also emphasise the need to move beyond a unidimensional account of stress in decision-making and indecision. The bidirectionality of the HF-HRV response to the LDT showed the importance of recognising both threat and challenge forms of stress in indecision (Blascovich, 2008). At the same time, the results showed that the stress response was difficult to disentangle from underlying self-regulatory

capacity, which was also shaped by indecisiveness. The effect of stress on indecision cannot be studied in isolation at any one part of the model. It is not restricted to indecisiveness, decision appraisal, the content of a decision or the decision-maker's self-regulatory capacity. It is the product of these things in combination, such that a challenge form of stress can combine with indecisiveness to prevent indecision from occurring.

Given the exploratory nature of process indecision, there are many possibilities for subsequent research. Some of this is obvious: future studies need to employ better ways to deplete the self-regulatory resources of decision-makers, which the LDT was not successful in doing. Behavioural decision-making tasks could also include a manipulation of the decision-maker's appraisal of their own stress response or self-regulatory capacity (Jamieson et al., 2013a, 2013b; Inzlicht et al., 2014). In the two experimental studies, all the decision-making tasks resulted in concrete and final choices. The potential to not make a choice, both as an explicit option (Dhar, 1997) or as a natural outcome of the task, would allow for the exploration of process indecision in a less constrained way. The possibility of undoing or re-opening a decision, would similarly add to the scope for process indecision, and would be particularly useful if ruminative indecisiveness were included as part of the underlying model. By examining the full temporal range of the decision activity, such research would move further away from the notion of decision-making just as an instantaneous choice (McCall, 1987).

At a theoretical level, one question remains as to whether the two dimensions of process indecision (demand and difficulty) could be differentiated further in a revised model. They are currently grouped together largely because of their temporal coincidence (both occurring within the activity of deciding) rather than because they relate to the same functionalist needs. While the two processes have much in common in terms of motivation and adaptive challenge, recognising them as separate processes within a large framework of relationships may be more conceptually meaningful.

Self-presentation indecision. This third indecision process extends the psychological understanding of indecision by recognising that one source of decision difficulty is the adaptive challenge of being a *good* decision-maker. Affirming one's decisional competence, and not appearing indecisive, requires active self-monitoring and regulation as well as a sensitivity to social behaviour and norms. This aspect of indecision has long been observed. Janis & Mann (1977), for instance, discussed the importance of a person's self-esteem as a competent decision-maker. There are also hints at identity-based needs of decision-makers in conceptual descriptions of indecision

(Rassin, 2007). However, self-presentation indecision has not yet been directly studied in an experimental setting.

The model therefore explicitly included self-presentation at the state, rather than trait, level, and sought ways to elicit it directly. The aims were not ambitious: merely to show the possibility of self-presentation indecision alongside other forms of indecision, rather than for fine-grained analysis or examination of the functionalist parameters. The many cognate concepts which may be relevant to self-presentation indecision, which were mentioned in Chapter 3 are yet to be pruned and assembled into a parsimonious theory.

Nonetheless, evidence of self-presentation indecision, particularly of indecision behaviour produced by a paradoxical pseudo-decisiveness, is itself a significant step forward in demonstrating the utility of the model to account for dimensions of indecision which have otherwise been overlooked. Beginning with Study 1, qualitative data showed that concerns about one's own indecisiveness featured strongly in participants' narratives about a recent instance of indecision. One plausible interpretation is that when decision-making is salient, the awareness of one's own indecisiveness also increases and plays a greater role within the activity of decision-making.

The paradata collected during the completion of the composite indecisiveness measure in Study 2 was also able to bring about behaviour consistent with minimising the exposure to an undesirable facet of the participant's identity and character. Accelerated choice behaviour was observed in participants higher in avoidant indecisiveness. While this is consistent with predictions at the trait level, the construct of self-presentation indecision helps explain what is going on at the state level. Self-presentation indecision can account for participants removing themselves from reminders or tests of their own indecisiveness, in absence of an imminent decision. In this way, indecision experiences are relevant to the ongoing construction of the self as a decision-maker (Newark, 2014). The avoidance of experience, as can be enlivened by self-presentation indecision, also bears some similarities to clinical patterns of experiential avoidance, which are discussed in the next chapter.

It was Study 3, however, that clearly showed that the experience or anticipation of indecision was associated with the pseudo-decisiveness of trying to resolve the decision problem in a visibly normative way. Interestingly, this kind of protective self-presentation (Arkin, 1981; Wilmot et al., 2016) was predicted by aversive indecisiveness, not avoidant indecisiveness as described above. Consistent with the

model's separation of trait and state processes, this shows that self-presentation indecision is not tied to one form of indecisiveness, but depends on situational needs and appraisals. There was also an inhibition of intensity of self-reported emotion and experience with increasing aversive indecisiveness, which is the opposite of consistent findings across the other two studies, as well as other conditions within this study. This suggests that it is the most obvious and stereotypical signs of indecision (especially as aversive experience, decisional latency and increased search) which are actively suppressed.

While there was no direct impairment of performance observed in Study 3, there was some evidence that decision-makers missed out on the full instrumental potential of their decisions because of the added load of appearing to be decisionally competent. Further research will be needed to explore the conditions under which the pseudo-decisiveness of self-presentation indecision can impair performance. Using methods from the stereotype threat literature (Spencer, Logel, & Davies, 2016) may be one way forward, as would the integration of ideas from social metacognition research both old and new (Snyder, 1974; Mirels et al., 2002; Briñol & DeMarree 2012).

Looking Ahead: A Deepening Functionalist Pluralism?

There are, inevitably, some concerns which linger about functionalist models. As Tetlock (2002) noted, it is true that functionalist models cannot be falsified, and that "there is, in principle, no end to the conceptual tinkering in which determined defenders can engage to preserve core premises" (p. 452). At the same time, a theory of indecision and indecisiveness must be applicable to the real world. A psychological model must anticipate the complexities of decision-making by people holding multiple motivations who are living in dynamic social environments. Push this too far, however, and what is created is not only a non-falsifiable model but a surrogate for theory (Gigerenzer, 1998). Some cautious trade-offs are therefore necessary.

Tetlock's (2002) compromise position of *functionalist pluralism* has been influential in the development of this model. In summary, this involves looking for precise mechanisms as far as possible, while extending functionalist principles by acknowledging multiple benchmarks of rationality, and also identifying the boundary conditions of how motivations and functions influence behaviour. The three motivations and adaptive challenges of a decision-maker, coupled with a multi-component and process-based account of indecision and indecisiveness, is an initial attempt to apply functionalist pluralism to indecision and indecisiveness.

For subsequent research, Tetlock's (2002) advice is reassuringly pragmatic, pointing out that functionalist programs may not be falsifiable, but they are *exhaustible*. That is, there is "a point reached when the patience of investigators and professional gatekeepers collapses" (p. 452) in the quest for understanding. Acknowledging that the patience of the reader is equally exhaustible, if not already exhausted, three brief comments in closing on what this may mean will suffice.

Foremost, it means that the quest to identify and refine the functionalist basis of decision-making as it relates to indecision and indecisiveness must also be accompanied by a preparedness to discard functionalist programs which are less useful. This relies on the incremental and accumulative nature of empirical research, where the development of theory and evidence is beyond the scope of a single study or even a collection of three studies. Yet this may also require drawing a line which leaves behind studies which have a non-functionally pluralist understanding of decision-making. The precedential weight of studies which are heavily based on rational consequentialism, or where there is a false equivalence of indecisiveness and indecision, must be adjusted accordingly.

Secondly, the present model is based on three functionalist motivations of decision-making, rather than being a functionalist account of indecision itself. There are some good reasons to consider this as an extension to the model. As Janis & Mann (1977) recognised, people are often reluctant decision-makers. The motivation to attain good decision outcomes, manage the decision-making process and to look good as a decision-maker are not always present. There may also be a corresponding motivation not to decide at all. Such a motivation is distinguishable from avoidant indecisiveness, which is characterised by conflict and threats to adaptive goals. In avoidant indecisiveness, the strong desire for good decisional outcomes is met with perceived decisional incapacity. Agency and a departure from the status quo are desired, just without the obstruction of having to be the decision-maker. A functionalist account of indecision, on the other hand, links decision-making with a disruption to the status quo. If all decisions involve change (if not the "madness" of indecision described by Derrida, 1978) — even in the choice not to choose or in the defensive avoidance of decisions — then is also an understandable motivation of the reluctant decision-maker to stay as is through inaction and inactivity (Samuelson & Zeckhauser, 1988). Such an integration of this (anti-)motivation into the functionally pluralist model may allow for an even greater rapprochement with Anderson's (2003) notion of decision avoidance.

Thirdly, any enthusiasm for the "tinkering" of the functionalist program must be matched by efforts to develop better methods which can elicit and test the relationships between motivation, appraisal and behaviour in relation to indecision. Some of these empirical challenges have already been discussed. There is a need for experimental tasks that elicit greater levels of stress and discomfort in decision-makers, within ethical boundaries. There is a need to vary how experiment tasks are framed: as decision-making tasks or otherwise. There is also a need for cultural extension beyond a WEIRD sample, although cultural differences in indecisiveness per se may be overshadowed by the more interesting question of cultural differences in functional needs and motivations.

The sociocultural examination of the assumptions about both decisiveness and indecisiveness which was begun in Chapter 1 also needs to continue. Ongoing empirical sociological and cultural psychological inquiry about these norms across cultures would be beneficial, especially if they look beyond departures from standards of rationality. Closer to home, the norms of decisiveness even in WEIRD societies may also be changing. The costs of the transfer of decisional responsibility to individuals under the neoliberal turn of the past few decades are becoming increasingly apparent, especially when accelerated by recent technological developments.

Beyond ideological critiques (Pabst, 2016), psychological and behavioural adaptations to changing norms and expectations needs to be considered. For example, algorithm-based choice, where the activity of decision-making is delegated often without awareness to an artificial intelligence system, is becoming increasingly common in both consumer decisions and beyond. While these algorithms seemingly anticipate and prevent the negative experience of indecision (Sunstein, 2015), they are not necessarily benign or even neutral (Newell & Marabelli, 2015; Mik, 2015; Hallinan & Striphas, 2016). The presence of such substituted and automatic choice has the possibility of changing the expectations of what it means to be a decision-maker and what it means to choose. They can also embody the biases of their programmers or systems and have the possibility to transmit and legitimise injustices (O'Neil, 2016) in ways which only underscore the importance of human agency in decision-making.

To apply Zygmunt Bauman's (2008) observation, "the conditions under which choices are made are not themselves a matter of choice" (p. 72). The study of indecision must therefore keep pace. Understanding the motivations and challenges of the decision-maker is ever more important, especially if the availability of choice and the benefits and reasons for choosing cannot be taken at face value. Careful development of the model provides a way forward to understand this psychology of

indecision and indecisiveness in ways which have not been addressed elsewhere. Although more evidence is needed, much can already be gained through the functionally pluralist lens which places the focus squarely back on the person as a decision-maker.

This has direct applications for clinical indecision, where difficulty with decision-making becomes a pathological problem amenable to psychological interventions. The next chapter therefore considers the application of the model to clinical indecision, drawing attention to the therapeutic advantages of paying attention to the motivations and adaptive challenges of the decision-maker.

CHAPTER 8:
CLINICAL PSYCHOLOGICAL DIMENSIONS AND THERAPEUTIC DIRECTIONS

This thesis so far has examined indecision and indecisiveness within the bounds of ordinary psychological experience. Following the view of Janis & Mann (1977), the experience of dysregulated or aversive difficulty, for the most part, is a normal and unavoidable part of being a person. Moreover, even though indecision has been conceptualised as a maladaptive response to the functional goals of the decision-maker, this does not mean that indecision is an intrinsically pathological state.

Even so, indecision can also be problematic to the point where it is clinically relevant. The distress or impairment associated with decision-making or of being a decision-maker may be at such a level that warrants psychological intervention. This chapter begins by reviewing the ways in which clinical psychology and psychiatry has made use of the concept of indecision. This is followed by a transdiagnostic therapeutic proposal which applies the functionalist theory of indecision.

A Clinical Silence

Given the description of indecision as a moral failure or personal conflict in the philosophical literature and in popular consciousness, a reasonable assumption might have been that indecision is also regarded in clinical psychology or psychiatry as a distinct kind of psychopathology. It may be surprising, therefore, to discover that there is only a relatively paltry literature in the disciplines of clinical psychology and psychiatry about decision difficulty (cf. Dalal & Brooks, 2013). Radford, Mann, & Kalucy (1986) observed that the literature on clinical aspects of decision-making was "meagre" (p. 210). The incremental advances of research and understanding during the intervening three decades have still taken place around the periphery of decision difficulty itself. There is still an insufficient interface between clinical psychology and indecision as a psychological phenomenon. This stands in contrast with the relative abundance of self-help and manualised treatments for procrastination (Uzun Ozer, Demir, & Ferrari, 2013; Rice, Neimeyer, & Taylor, 2013; Dryden & Sabelus, 2010; Burka & Yuen, 2008; Steel, 2010; Knaus, 2010) and career indecision (Fuqua & Hartman, 1983; Fouad, Cotter, & Kantamneni, 2009).

This clinical indifference towards decision difficulty is also evident in its cautious reception into the American Psychiatric Association's Diagnostic and

Statistical Manual of Mental Disorders (DSM). This is unusual, given that a common criticism of the DSM is that it tends to overpathologise human experiences and behaviour (Batstra & Frances, 2012), rather than underpathologise it. This attitude may not be undesirable as it allows a fresh approach to clinical conceptualisation and treatment which is informed by theory and evidence rather than an atheoretical classification system. Nonetheless, descriptive labels such as "indecisiveness" or "difficulty making everyday decisions" remain in the DSM-5 (APA, 2013) without further elaboration in a small number of diagnostic criteria across the range of disorders, as will be discussed.

One reason for this disinterest may be the deficit of clinically-relevant theory about indecision and indecisiveness. This claim may sound familiar, as there are strong parallels with the problem stated in Chapter 2. Without well-developed psychological models of decision-making, of being the decision-maker, and the normal experience of indecision, there is nowhere to situate the clinical distress and dysfunction associated with deciding. As in the case of ordinary decision-difficulty, a focus of the limited clinical discussion is instead on the consequences of indecision, rather than the experiences and motivations of the struggling decision-maker.

Applying the Functionalist Model

The model advanced in this thesis, while primarily attempting to account for "normal" indecision (and tested on non-clinical populations), is asserted to be equally informative and adaptable where indecision crosses this threshold into psychopathology or clinical impairment. Before considering this further, some clarity is needed about what "clinical" indecision means. The distinction between normality and pathology is, of course, not a simple dichotomy. Moreover, just as there is no one picture of "normal" indecision, there is also no one phenotype of maladaptive or pathological indecision. A functionalist account of decision-making means that any pathology should be evaluated with respect to the obstructed goals of the decision-maker rather than to designate specific behaviours or outcomes as inherently problematic.

Accordingly, a clinical approach to indecision and indecisiveness which applies this functionalist model also resists a diagnostic or categorical reification of indecision. Such a position follows the historical precedent set by DSM. However, there are other good conceptual and practical reasons for steering clear of defining indecision as a unitary disorder or even a class of pathologies. At the broadest level, turning ordinary indecision into a mental disorder may unintentionally create a tool of social control. As

Krumboltz (1992) recognised, it is not a social good to encourage decisive resolution when indecision may in fact be the better course of action. Pathologising indecision may create even more unrealistic expectations about decisiveness and of being a "good" decision-maker. These are favourable conditions for self-presentation indecision which can impair decision-making processes, creating a self-fulfilling cycle. Indecision may sometimes be pathological, but understanding why it is so and how to intervene cannot be achieved successfully by looking only at decisional outcomes, behaviours or arbitrary standards of decisiveness.

What is the Problem?

A brief review of the meagre clinical literature draws attention to other theoretical and practical reasons for not beginning by defining an "Indecision Disorder" as the basis for considering clinical indecision. The limited clinical literature addresses indecision in three different ways: (i) as an upstream component of general psychopathology, (ii) as a symptom of a recognised disorder, or (iii) as a clinically significant phenomenon in its own right. There is particularly insufficient attention given to the third category. Indecision tends to be considered as a secondary problem, with little attention given to common processes which operate across all three approaches. As such, the end-point to be reached in this chapter is to work towards a transdiagnostic model of indecision as a clinical problem which directly informs psychological interventions in a way which is consistent with the theory and data from previous chapters.

Indecision as a General Antecedent Pathology

At the most distal clinical level, indecision is a diffuse antecedent or upstream pathology. That is, indecision is a precursor to one or more other end problems which are the actual focus of clinical attention. Two highly contrasting literatures exemplify this approach, perhaps being one of the few occasions when it is possible to talk about Freudians and Bayesians together without too much conflict (or transference).

Although the psychodynamic and psychoanalytic literature can be opaque and difficult to interpret, there is a strand of case reports from the twentieth century where indecision is characterised as a general unconscious process in psychopathology. Druss (1976), for examples, describes it as pervading the "very core of [a person's] psychic structure" (Druss, 1976, p. 206). Bergler (1940) described indecision as a pre-neurotic

or latent neurotic feature which precedes other conflicts and problems. Indecision is therefore neither held out as the primary clinical problem, nor is it a distinct symptom of some other problem (cf. Freud, 1908/1959, 1909/1955). Instead, indecision is a generalised precursor to neuroses and other psychological problems.

Such indecision often reveals itself within the transference relationship between therapist and client, pointing to and explaining other problems and dysfunctions. The aetiology of indecision itself is ultimately explained through general and sometimes inconsistent principles, such as a Freudian conflict as part of the person's psychosexual development. For instance, is indecision caused by inadequate separation from the mother (Lamprell, 1989) or a desire for the death of the father (Bergler, 1940)? It is difficult to decide.

Functionally, however, this literature gravitates towards themes of maladaptive power and control in explaining what the decision-maker seeks to achieve. According to Lamprell (1989), indecision is an "unsatisfactory attempt to be separate, to control by being in control of nothing happening", and thus to "invite collusion" from others in the decision-making process (p. 227). Indecision is an interstitial defence mechanism between the security of "sameness" and the status quo, on one hand, and the loss of control but the opening up of possibilities which comes about by things being different, on the other (Lamprell, 1989; cf. Glenn, 2001).

Druss (1976) talks about a dysfunctional attempt to maintain control and thus being unable to renounce an "infinite number of potential options", which is "an impossible task for someone who cannot give up anything" (p. 206). Although not of primary clinical concern, therefore, indecision is inseparable from a conflicted or inadequate sense of self in a way that is consistent with the model of indecision proposed in this thesis. This suggests that clinical interventions which address the self-concept may be helpful, especially where indecision is a direct and conscious clinical problem.

While very different in their theoretical and methodological bases, recent computational and neurocognitive accounts of decision-making problems in psychopathology share some of the characteristics of the psychodynamic conceptualisation of indecision. Indecision in these newer models is also not usually identified as a separate clinical feature. Signs of decision difficulty are instead epiphenomena or as intermediate indicators of some other problem. Rather than a deficit of self, there is a deficit in information processing which causes indecision. Bad decision-making and indecision is a computational error which impairs downstream

aspects of adaptive functioning, which then causes or maintains other psychological problems of clinical interest.

For example, Huys, Guitart-Masip, Dolan, & Dayan (2015) explore psychopathology through the lens of Bayesian decision theory. They identify three neurocognitive "fault lines" where decision-making can fail: (i) solving the wrong problem (incorrect utility functions, prior beliefs or likelihoods), (ii) solving the right problem but poorly or wrongly (incorrect inferences), and (iii) solving the right problem correctly, but in an unfortunate environment (incorrect experience). Juxtaposing Bayesian decision theory with cognitive neuropsychiatric theory and evidence, they suggest that a wide range of psychopathologies, from depression to schizophrenia to personality disorders, may be partially explainable by these fundamental problems. While this model is not specifically about indecision — although each fault could fit within the model proposed — it illustrates a way of looking at pathological decision-making where the real pathology is in the sequelae of these cognitive points of failure as judged according to normative standards. The framework equates decision-making with problem-solving along the lines of the single-motivation paradigm described in Chapter 1. The implication for indecision would be that indecision is only relevant if it affects the upstream computation of utility, ignoring other motivations of the decision-maker.

Similarly, Goschke (2014) seeks to explain mental disorders using a neurocognitive account of decision-making. This model also sets out to transcend the categorical and diagnostic view of psychopathology, taking a structural and functional approach guided by basic cognitive processes and macro-level brain systems. Unfortunately, it also takes a narrow view of decision-making. Decision-making problems are regarded as the failure of the "valuation and motivation network", leading to errors in the evaluation of value cues and reward prediction. Like in Rassin's (2007) model, valuation and motivation refer to instrumental outcome-oriented goal pursuit in the expected utility tradition.

Goschke (2014) then points out that these errors are in turn caused by problems of learning and memory, ultimately pointing to impairments in neural regions implicated in decision-making and indecision. These include areas such as the ventromedial prefrontal cortex, orbitofrontal cortex, ventral striatum and amygdala (cf. Damasio, Everitt, & Bishop, 1996; Scherer, Taber-Thomas, & Tranel, 2015). Dangers of neuroreductionism aside, this model is instructive for understanding system-wide relationships between decision difficulty and psychopathology, but says little about addressing indecision directly as a clinical phenomenon. However, by explaining

indecision without needing any recourse to the experience of indecision or the multiple motivations of the decision-maker, the limitations of a rationally consequentialist model of decision-making discussed in Chapter 1 also apply here.

Indecision as a Clinical Symptom

At the next level, indecision is explicitly recognised as a symptom within a defined psychological disorder, such as depression. Clinical indecision, therefore, is researched and therapeutically operationalised within the context of another disorder. As a result, theory and practice is influenced by the formal diagnostic criteria — and whether indecision is included or not. The status of indecision within the DSM criteria has changed considerably over its revisions.

Rassin (2007) rightly points out the anomalies created by this reliance on diagnostic criteria. Firstly, the clinical status of indecision subject to the prevailing diagnostic criteria, which can be somewhat arbitrary. Secondly, the resultant clinical research or therapeutic application then takes place within the context of that disorder. This creates more disorder-specific research and praxis rather than furthering an understanding of cross-cutting psychological processes involved in clinical indecision.

A closer inspection of the research reveals that there are two ways of operationalising indecision as a symptom, which, when taken together, may be more fruitful when applied to the present model. The first and more common approach is an aetiological analysis of how indecision as a symptom contributes to the disorder. The other inquiry reverses the direction of inquiry, looking at how indecision is expressed in a clinical population as compared with a non-clinical population. Both approaches can be examined with reference to two clusters of psychological disorders in which indecision has featured as a core symptom: Obsessive-Compulsive Disorder (OCD) and Obsessive-Compulsive Personality Disorder (OCPD), and mood disorders.

OCD and OCPD. In the contemporary clinical psychological context, the earliest research on indecision focused on the cluster of obsessive-compulsive disorders (e.g., OCPD, OCD and hoarding disorder). Diagnostically, indecisiveness was mentioned as part of the criteria for Compulsive Personality Disorder (CPD) in DSM-III (APA, 1980), which was the precursor to Obsessive-Compulsive Personality Disorder (OCPD) as it was known from DSM-III-R onwards (APA, 1987). This is noteworthy, as the DSM-III criteria for CPD includes some brief explanatory text about what "indecisiveness" means, giving a unique insight about how clinicians regarded

indecisiveness. The criterion appears as follows, using indecisiveness to refer to the frequency of the state of indecision:

> indecisiveness: decision-making is either avoided, postponed, or protracted, perhaps because of an inordinate fear of making a mistake, e.g., the individual cannot get assignments done on time because of ruminating about priorities (p. 328).

This definition, as an aside, is illuminating in its somewhat confused attempt to recognise the many different components of indecision. As would be expected in the DSM, it refers primarily to outward indecision behaviour, both in terms of decision avoidance and prolonged engagement. At the same time, the definition seeks to link this behaviour with a cognitive-emotional appraisal of the decision-making activity, identifying a fear of making a mistake and associated rumination as a primary cause. Different parts of the functionalist model of indecision are compressed into this definition, but what is missing is an explicit recognition of how the decision-maker's motivations relate to both appraisal and behaviour.

The revised criteria for OCPD in DSM-IV left out indecisiveness as a symptom (APA, 1994). This may be because empirical validations of the CPD criteria had found little support for the role of indecisiveness (Nestadt et al., 1991). However, such a move does not seem to be completely explained by the shift towards developing a descriptive, data-driven and atheoretical manual (Folette & Houts, 1996). Instead, there are hints at the fundamental difficulty of defining decision difficulty in a clinical context.

Looking beyond formal criteria, efforts to place indecision within a conceptual model of obsessive-compulsive disorders have also been ongoing but incomplete. Reed (1976, 1983, 1985) led the way in developing a novel cognitive and structural framework of OCD in which indecision was identified as a formal characteristic and core symptom. In this model, obsessions are associated with problems in spontaneously organising and structuring informational input. This in turn generates a maladaptive tendency towards over-structuring information. Faced with even simple choices, indecision therefore arises because of this increased need for precision and structure, as well as the additional (meta-)decisions involved in how to structure information within the decision in order to make a choice (cf. Buridan's Ass, see Chapter 1).

Part of Reed's project was to synthesise this cognitive conceptualisation with the older psychiatric and psychoanalytic literature on obsessional psychopathologies. He intended not only to provide a sense of continuity in understanding clinical indecision

and obsessive-compulsive phenomena, but also to recognise that a cognitive account by itself is insufficient to account for individual differences in indecision.

Reed (1985) notes that instead of *indecision* or *indecisiveness* as used in the clinical psychological literature, the early psychiatric writings on obsessive-compulsive disorders referred to *doubt* as a core feature. This was most prominent in the syndrome of *folie du doute* in nineteenth-century French psychiatry (Kovalewsky, 1887; Legrand du Saulle, 1875). Doubt, also termed *inconclusiveness,* sits more comfortably with talking about indecision as it relates to the decision-maker rather than as it relates to the decision content. It describes a "feeling of uncertainty" and "makes inferences about the person's state of mind" rather than focusing on behaviours and outcomes (Reed, 1985, p. 177).

Doubt is metacognitive, dwelling on capacity and judgment of the self as a decision-maker and obstructs the integration of the decision content with the decision-maker's adaptive goals. This may explain Reed's (1976) conclusion that indecision in OCD is not primarily caused by the content of decisions, but from "*decisions about decisions*" (p. 444). Indecision arises in the navigating the process of being the one who is doing the choosing, but who also has the responsibility of making that choice known and effectual. Doubt may explain the lack of personal conviction and closure in decision-making for people with obsessional presentations. Even though the decision may be simple, and the person may know what is the best objective choice, the state of inconclusiveness can persist and become distressing.

Indecision in the obsessive-compulsive cluster of disorders is therefore not just a computational or executive dysfunction (cf. Sachdev & Malhi, 2005), but also originates in a fear of personal invalidity (Thompson et al., 2001), which affects cognition but also shapes convictions and beliefs about choosing, responsibility and capacity as a decision-maker. Clinical indecision, in this line of scholarship, is therefore primarily a dysfunction of belief about the self which manifests when a person is called on to be a decision-maker.

In this tradition, Aardema & O'Connor (2007) therefore critique cognitively-dominant models of OCD by examining the role of self-representations. They propose that an important precursor to obsessions is faulty reasoning caused by a distrust of the *self-as-is*. The *self-as-could-be* moves from the background to the foreground, leading to maladaptive self-doubt, excessive self-monitoring and decreased confidence. This might be compared to the actual-ideal self-discrepancy implicated in self-presentation indecision (Higgins, 1987). The result is the gravitation towards potential undesired

selves and "taboo" identities or behaviours (including as a decision-maker) and the creation of undesirable potential self-narratives. These discordant self-narratives are ego-dystonic, and the strength of the negative self-perceptions require repeated evidence gathering and compulsive behaviours in an attempt at neutralisation or correction. This process provides a mechanism for the onset of obsessions, especially obsessions without overt compulsions, which are therefore characterised as a psychopathology of self-doubt.

While Aardema & O'Connor's (2007) theory does not address indecision specifically, it does cast light on how indecision operates within obsessive-compulsive presentations, especially when read together with Reed's (1985) formulation. The prominence given to the decision-maker's self-representation aids in understanding the difference between "normal" and clinical indecision, especially where there is no rational basis for indecision. Clinical indecision can still be understood as a defect of reasoning, as in normative cognitive models, but the fault lies in the false reasoning about the self as a decision-making agent, on top of any other cognitive errors about utility and probability.

Unfortunately, Reed's (1985) attempt to return the focus onto the decision-maker's experience and motivations has been overlooked in subsequent clinical work. This unfortunate development may be attributed to his comment that indecision, unlike the concept of doubt, can (and should be) "operationally defined" (p. 171) in terms of the standard behaviours of latency and increased information-seeking. Such objectivity is advantageous to psychological research, but it is also clinically limiting in overlooking the decision-maker herself or himself.

Reed's (1985) focus on behaviour was later adopted by Frost & Shows (1993) in their influential work on indecision and OCPD/OCPD, which led to the development of the IS and began a trend towards the psychometric measurement of indecisiveness and the behavioural measurement of indecision in terms of time and quantity of information consumed. This may have allowed Frost & Shows (1993) to avoid a deeper discussion of the decision-maker in their work. Instead, they merely asserted that "… indecisiveness should be related to obsessive compulsive phenomena. Most of the theoretical and descriptive literature suggests such a relationship" (p. 684). They acknowledge that the empirical literature was more equivocal, but turned their attention to trait measures.

Later research has indeed supported the relationship between obsessive-compulsive symptoms and trait indecisiveness using the IS (Rassin & Muris, 2005) or using the standard behavioural indicators of indecision (Sarig, Dar, & Liberman, 2012).

However, the clinical understanding of decision difficulty, including in the obsessive-compulsive spectrum of disorders, has not advanced greatly.

Depression. The relationship between depression and indecision has also been long recognised. Early twentieth century psychiatric and psychanalytic discussion of neuroses often described indecision in ways which resemble the modern-day conceptualisation of decision difficulty in depression or anxiety (Dercum, 1917; Ring, 1909). Jumping ahead several decades, the original versions of the Hamilton Rating Scale for Depression (Hamilton, 1960) the Beck Depression Inventory (Beck, Ward, Mendelson, Mock, & Erbaugh, 1961), both included indecisiveness (meaning frequent indecision) as a core diagnostic feature. This was some 20 years before the inclusion of indecisiveness for the first time in the DSM-III criteria for a major depressive episode (APA, 1980).

Since then, a number of studies have found a linear relationship between the intensity or frequency of depressive symptoms and decision-making impairments. In an Australian inpatient psychiatric population, Radford et al. (1986) found a moderate-sized relationship between the levels of depressive symptoms and self-reported difficulty with making everyday decisions. Radford et al. (1986) also observed impairments in decision-making which resemble indecision behaviours, including a high frequency of "irrational" decisional outcomes, non-decision and decisional latency.

This general finding has been replicated in more recent studies at the trait level in both clinical and non-clinical populations (van Randenborgh, de Jong-Meyer, & Hüffmeier, 2010; Leykin & DeRubeis, 2010; Rassin et al., 2007; Walker & Peterson, 2012). Curiously, none of these recent studies look at actual decision-making behaviour and its relationship with depression. Nonetheless, in these psychometric and correlational studies, depression was observed to have wide-ranging negative effects on dispositional attitudes and tendencies in decision-making.

Global impairments of decision-making, however, are not equivalent to indecision. Decision-relevant concomitants of depression such as perfectionism, risk aversion and impaired self-esteem (Leykin & DeRubeis, 2010) may predict indecision, but as repeatedly stated throughout the thesis, it is important to distinguish between state and trait processes. It is also important to explore the mechanisms through which the decision-maker engages with the decision event to produce a psychological state of difficulty or incapacity, but the clinical literature does not go this far.

The relationship between depression and indecision (or at least indecisiveness) must also be tempered with other findings that measures of self-reported decision

impairment are often more strongly correlated with measures of anxiety than depression (Rassin et al., 2007; Radford et al., 1986). This was partially supported by the results of Study 1. In a non-clinical sample, all three forms of indecisiveness, as well as the IS-R and PFIS summed scores, were correlated with the depression subscale of the DASS-21. However, the size of the correlations were small and did not load on the depression subscale significantly more than on the anxiety or stress subscales.

As such, just because depression is associated with indecisiveness or indecision behaviour does not mean that indecision is specific to depression. This should come as no surprise after the discussion on indecision and OCD/OCPD above, although it alludes to the problems of examining indecision from the niche of a particular disorder or cluster of disorders. The clinical non-specificity of indecision and indecisiveness also raises questions about whether indecision is a transdiagnostic clinical feature or if specific features of depression can explain its effect on indecision and impaired decision-making. Although there are good reasons for the first approach, which will be explored later, the literature has given more attention to the second path.

This line of clinical research here begins with a characterisation of depression as a disorder of cognition which affects executive functioning, information processing and rationality. This is the long-held position of the DSM, where indecisiveness is listed alongside slowed thinking or diminished concentration in the criteria for a major depressive episode (APA, 1980, 1994, 2001, 2014). This has led to some efforts to look for a distinctive cognitive style of indecision in persons with depression.

Lewicka (1997) observed that depression was associated with greater criterion-based choice rather than alternative-based choice, similar to the finding of Patalano & Wengrovitz (2007) when comparing decisive and indecisive participants. Contrary to the studies mentioned above, participants with a diagnosis of depression were observed to be *more* impartial and *less* rationally biased in their processing of information. Yet depressed participants exhibited greater indecision, not just in terms of increased decision latency but also in having less well-defined or stable preference structures. These participants were therefore less willing to commit to an outcome. These findings provide an interesting twist on Buridan's Ass, suggesting that indecision may be a by-product of rationality, rather than a deficit of it. Depression may be interfering with a person's ability and willingness to impose structure on the decision problem (cf. Reed, 1985) and construct preferences as an active decision-maker to bring about a functional resolution.

A similar need to disentangle the cognitive-informational and self-as-decision-maker aspects of clinical indecision is apparent in the studies about depression, rumination and indecision. Rumination is a common cognitive feature of depression and, as the studies have shown, a core component of indecision and indecisiveness. Rumination is used in a broader sense here, referring to a general tendency for prolonged and repetitive thought about an experience (Watkins, 2008), rather than the more specific post-decisional rumination identified previously as one component of indecisiveness. Di Schiena, Luminet, Chang, & Philippot (2013) found that dispositional levels on two different kinds of rumination may differentially account for indecision independent of depression symptoms. Abstract-analytical (A-A) rumination, characterised by "big picture" causes and meanings of experience, was found to be correlated with trait indecisiveness and predicted situational indecision. A-A rumination is a quintessentially self-evaluative process, with attention being directed back to the self in a broader way than required by the adaptive demands of the situation, resembling an unbounded form of self-presentation or process indecision.

Concrete-experiential (C-E) rumination, on the other hand, is directed at specific details of events, and the actions and reactions of the person and others. C-E rumination was also correlated with depressive symptoms but predicted lower levels of indecisiveness and indecision behaviour. Being a goal-directed form of rumination, it may in fact be adaptive in terms of decision-making by focusing attention on immediately-relevant and concrete experiences (Trope & Liberman, 2003). It resembles what Donald Schön (1983) called reflection-in-action, providing immediate feedback and learning opportunities in service of functional needs and motivations.

The most interesting finding from Di Schiena et al.'s (2013) study, supported by similar work by van Randenborgh, de Jong-Meyer, & Hüffmeier (2010), is that self-directed A-A rumination may operate independently of depression to elicit indecision, particularly self-presentation indecision. Depression may therefore be a moderating catalyst, with a global critical self-concept also biasing attention to the self as an incapable decision-maker. This hypothesis would be consistent with the findings of Studies 2 and 3, which showed that heightened attention directed to the decision-maker's role and identity is a predictor of indecision.

Such an approach is welcome in that it can help explain pathological indecision in depression without depending on it. It also helps extend the findings of other correlational studies, showing that depressive symptoms were correlated with reduced decisional self-esteem and increased negative self-perceptions about being a decision-

maker (van Randenborgh et al., 2009, 2010; Leykin & DeRubeis, 2010). Similar to the approach taken in relation to indecision in OCD, maladaptive reasoning and inference processes should be considered in the context of the decision-maker's self-perceptions and representations.

To be clear, the problem is not that attention is directed to the self during a decision event. After all, this thesis has sought to show that attempts to erase the decision-maker and her motivations from decision-making results in psychologically unconvincing theories of decision-making, indecision and indecisiveness. Clinical indecision, as exemplified in depression, may be characterised by a perception that the decision activity is an overwhelmingly imposing burden overshadowing the decision-maker. The decision activity constrains and suffocates the self, rather than the decision-maker being an active agent in engaging with and imposing a resolution on the decision. Such passivity inhibits appropriate spontaneous reflection and action towards good decision outcomes, good decision-making and being a good decision-maker. Instead of character and identity being formed through repeated choice, as Descartes and Aristotle envisaged, the decision-maker becomes stuck, with decisions acting as reinforcing reminders of incompetence and a lack of decisional control.

Indecision as a Clinical Problem

The preceding discussion has already alluded to the third way in which indecision can be conceptualised: as a clinically significant problem itself. The pathology here is the distress or impairment which arises from the activity of decision-making or of being a decision-maker. As mentioned earlier, there is very little literature directly addressing clinical indecision from this perspective. However, indecision as a clinical presentation has already been canvassed indirectly in aetiological models within OCD and depression which recognise the decision-maker's struggles and conflicts within the decision event.

Clinical indecision as a primary presenting problem is best examined by working through one possible therapeutic model. Before doing so, some guiding principles for the clinical conceptualisation of indecision may be helpful. There are several overarching aims here: avoiding the unnecessarily pathologisation of indecision or its reduction to a superficial set of symptoms, recognising the broad dimensions of indecision consistent with the functionalist model, and distinguishing clinical indecision from normal indecision within socially and culturally appropriate parameters.

1. Clinical indecision should not be reduced to "bad decision-making" according to some normative benchmark. Objectively identifiable problems may of course be present, but these are insufficient to define a clinical presentation. From a functionalist perspective, clinical indecision is identified by distress and impairments which obstruct the multiple motivations of the decision-maker. This distinguishes clinical indecision from other pathologies of motivation or self-regulation such as procrastination (Steel, 2007).

2. Similarly, clinical indecision is not necessary caused by a deficit of rationality. Instead, indecision may a product of the surfeit of rationality but where the decision-maker is unable to engage adaptively with the decision activity, including bringing it to a resolution (Reed, 1985; Lewicka, 1997). Clinical indecision may, however, involve problems in reasoning about the self as decision-maker which impede the adaptive engagement with decisions.

3. Clinical indecision is therefore ego-dystonic: it is experienced as an unwanted and distressing state which is inconsistent with the desired self, or otherwise confirms an undesirable or defective aspects of the person as a decision-maker. Commonly, this takes the form of negative affect and immediate distress when faced with the activity of deciding. The intensity of emotion may be disproportionate to not only the value of decisional outcomes, but also other functional roles and motivations within and beyond the decision event.

4. Alternatively, the ego-dystonicity of clinical indecision might express itself as a fearful and threat-based hypervigilance to anticipated decisions followed by a withdrawal and dissociation from actual decisions. The experience and expression of distress, hypervigilance or avoidance is a core part of the clinical presentation of indecision, and is not to be regarded as merely an endpoint or peripheral symptom.

5. As such, clinical indecision does not generally include a situation where a person does not experience decision-making as threatening or distressing, even if it is objectively dysfunctional or the person is showing the manifest behaviours consistent with indecision. This kind of presentation requires separate investigation, especially if obviously maladaptive indecision is experienced as ego-*syntonic*, that is, consistent with the self-concept and

therefore rewarding. The present model and therapeutic suggestions do not apply in such a case.

6. In addition to the immediate experience of distress or avoidance, clinical indecision also involves maladaptive attempts to regulate this experience and expression of decision difficulty. This is part of the heightened salience of the decision-maker identity which is appraised to be defective or fragile, and may be expressed in different ways, including:

   (a) Maladaptive, intrusive or distorted cognitions and beliefs about the person's own indecisiveness or incapacity as a decision-maker;

   (b) Rumination on previous instances of indecision or "bad" decision-making;

   (c) Maladaptive coping with indecision, including safety behaviours where complete avoidance is not possible, e.g., "pre-deciding" or "pre-crastinating" (Sunstein, 2015), decision deferral, delegation or non-decision;

   (d) Having a disproportionate motivation to appear decisive, competent or socially normative as a decision-maker as a primary objective of decision-making in a way that interferes with other adaptive decisional goals.

7. Clinical indecision should not be domain specific in its expression and experience. After all, indecision is less about the content of decision, but more about the person's appraisal of decision-making and being a decision-maker. For indecision to be a clinical problem, it should occur across a range of situations. The frequency of indecision may itself be problematic, but this should not be the sole determinant of psychopathology.

8. Because of the frequency and intensity of distress, the clinical indecision must be causing impairment to the person. In the language of the DSM, the experience of indecision must result in marked impairments in social or occupational functioning. The impairment should not be identified primarily on account of the cost of missed opportunities or irrational choices, but in terms of problems experienced in the course of deciding.

9. Finally, and to borrow the language of the DSM again, the experience of indecision and its accompanying distress and impairment must not better accounted for by another problem. This is not to say that clinical indecision can only be identified after excluding other problems or disorders such as depression (cf. Walker & Peterson, 2012). Such categorical comorbidity is irrelevant in a transdiagnostic approach to treatment, as psychological interventions can be applied whenever clinical indecision is a presenting problem. Rather, indecision should be identified as a treatable clinical problem only if the maladaptive processes identified cannot be explained by other problems. These problems would include neurocognitive impairment (especially relating to attention, memory, impulse control and inhibition), reality testing (especially delusions or psychosis), or pervasive developmental disorders which impair the understanding and enactment of social norms or behaviours (such as autism spectrum disorders). Interventions that address the cognitive, metacognitive and emotion regulation aspects of indecision and the expectations of being a decision-maker would be contraindicated in such presentations.

A Transdiagnostic Therapeutic Proposal

Whereas the psychological literature on general indecision is meagre and the aetiological literature on clinical indecision even more sparse and fragmented, there is an even bigger gap in the therapeutic discourse on indecision. The few mentions of the treatment of indecision are mostly outdated, unhelpfully general, or too specific. For instance, Mendonca & Siess (1976) showed that both problem-solving and anxiety management skills training (to develop instrumental rationality and self-regulation) were helpful in addressing indecision. Radford et al. (1986) and Cerniglia, Horenstein, & Christensen (1978) used similar self-management and decision-making training as one intervention for decision difficulties. However, the programs focused more on enhancing autonomy and agency in relation to activities of daily living within long-term psychiatric settings. Virtually no research has been conducted since this time on the psychological treatment of clinical indecision itself.

The resultant blank slate is exciting but also daunting in a recursive way: some difficult choices need to be made about how treat clinical indecision. One theme of this thesis has been to integrate a functionalist account of indecision with the JDM literature as far as possible, rather than inadvertently re-creating another general decision theory. The same principle applies to the treatment of clinical indecision. As much as possible,

the treatment of indecision should be integrated with validated treatment approaches, rather than creating a therapeutic silo through yet another manualised intervention. The aim of this chapter is not to provide a comprehensive treatment framework for clinical indecision, but to show that some simple steps towards a theory-driven therapy are possible.

The Unified Protocol

From the preceding principles, it follows that a transdiagnostic conceptualisation of indecision should also be met with a transdiagnostic framework for treatment. Transdiagnostic interventions stand in contrast with disorder-specific treatments, which are based on a nosology that tries to maximise difference between disorders as separate entities which require separate treatments. Transdiagnostic treatments place much less emphasis on the diagnostic label and instead aim to identify and address pathological processes which are shared across different problems (Mansell, Harvey, Watkins, & Shafran, 2009; McHugh, Murray, & Barlow, 2009; Dudley, Kuyken, & Padesky, 2011). This approach acknowledges the high comorbidity between disorders and seeks to avoid problems of diagnostic over-specificity which inhibit appropriate treatment (Watkins, 2015), while efficiently aiming to balance treatment fidelity, flexibility and efficiency (McHugh et al., 2009).

Although ambitious and relatively new in clinical psychology, there is accumulating evidence for the efficacy of transdiagnostic treatments for emotional disorders (McEvoy, Nathan, & Norton, 2009; Wilamowska, Thompson-Hollands, Fairholme, Ellard, Farchione, & Barlow, 2010). These disorders typically encompass unipolar depression, some anxiety disorders (including OCD), trauma-related disorders and co-morbid presentations and related problems which otherwise fall into sub-diagnostic or "Not Otherwise Specified" (NOS) categories.

The Unified Protocol for Transdiagnostic Treatment of Emotional Disorders (UP; Barlow, Allen, & Choate, 2004; Moses & Barlow, 2006; Ellard, Fairholme, Boisseau, Farchione, & Barlow, 2010; Payne, Ellard, Farchione, Farholme, & Barlow, 2014) has been actively developed and validated and is most comprehensive example of a transdiagnostic treatment framework. It is also one which could be applied to clinical indecision. The UP is an emotion-focused approach to treatment derived from the cognitive-behavioural therapy (CBT) tradition. Moses & Barlow (2006) identified three therapeutic goals in the UP: (i) to alter maladaptive antecedent cognitive appraisals, (ii) to identify and modify maladaptive emotion-driven behaviours (i.e., reactive action

tendencies such as withdrawal), and (iii) to prevent defensive emotional avoidance in the form of subtle behavioural avoidance (e.g., procrastination and use of safety behaviours), and cognitive avoidance (e.g., thought suppression).

Later and more prescriptive descriptions of the UP set out either four or five core treatment modules, with other "non-core" modules aimed at socialising the client into treatment, setting goals and preventing relapse (Bullis, Fortune, Farchione, & Barlow, 2014; Wilamowska et al., 2010; Ellard et al., 2010). Table 8.1 outlines the Payne et al.'s (2014) eight UP modules with a summary of the therapeutic objective and activities in the second column.

A disadvantage of the UP is that it has become more complex and prescriptive with time. Some implementations of the UP afford little flexibility and begins to resemble yet another detailed manualised treatment. Formulaic application of the UP is never desirable, and for clinical indecision, the UP should not be the basis of a derivative therapeutic protocol. The UP merely shows that the treatment of clinical indecision need not be radically different from other forms of therapy, and could be easily integrated with treatment for co-occurring problems.

Table 8.1

UP Modules Summarised from Payne et al. (2014) with Applications for Indecision

UP Module	Objective/Activities	Indecision Application
1: Motivation Enhancement for Treatment Engagement	• Identify and develop pros and cons of changing vs. staying the same; • Treatment goal-setting exercises.	• Explore positive motivations and goals of decision-making (good decision outcomes, good decision-making and good decision-maker). Identify and set goals for all three motivations. • Use therapeutic/transference relationship as basis for exploring basis of change (e.g., indecision about change or practical aspects of therapy). Reflect on decision to start therapy as example of successful decisive action. Identify points of ambivalence about therapy.

2: Psychoeducation and Tracking of Emotional Experiences	• Develop awareness and ability to track nature and function of emotions; • Identify relationships between cognitions, behaviour and emotions, and the role of negative reinforcement (avoidance).	• Develop awareness of difference between different functional motivations of deciding/being a decision-maker in client's everyday experience and in areas of impairment. • Identify difference between choice as instantaneous behaviour vs. decision-making process. • Recognise nature and function of emotions, cognitions and behaviours within act of deciding, including the presence and consequences of decision avoidance.
3: Emotion Awareness Training*	• Develop awareness of experience of emotions through mindfulness; • Identify adaptive/maladaptive patterns of emotional responding and emotion regulation strategies.	• Practise developing awareness of identifying and reporting emotions involved in decision-making: especially the range of emotions involved in aversive process indecision and their antecedents and action tendencies. • Practise separation of anticipatory emotions (those during activity of deciding) and anticipated emotions (of potential outcomes, i.e., affective forecasting). • Combined with graded exposure (overlapping with Module 7), practise mindful awareness of the decision activity.
4: Cognitive Appraisal and Reappraisal*	• Develop understanding of appraisals and interpretations of situations; • Understanding relationship between appraisal and	• Understand normal appraisals of decision-making as a psychological event. • Understand appraisals and emotional responding during aversive indecision (process indecision). • Understand attempts to regulate indecision and indecisiveness (self-

	emotional responding; • Correcting fundamental misappraisals as to probability and consequences.	presentation indecision) based on maladaptive appraisals. • Understand and challenge distorted self-appraisals (e.g., distrust of self as decision-maker) and schemas (e.g., as someone incapable of making good decisions). • If appropriate, use expected utility approach to understand and correct distortions about probability and consequences as applied to decisional outcomes (outcome indecision).
5: Prevention of Emotional Avoidance and Modifying Emotion-Driven Behaviours (EDBs)*	• Detailed identification and functional analysis of emotional avoidance strategies; • Changing response to EDBs, including by changing action tendencies.	• Identify and modify decisional avoidance strategies, including strategies during decision-making. • Identify and prevent maladaptive downregulation of aversive indecision. • Identify and limit anticipatory preparation for decisional threat. • Identify and reappraise/eliminate safety signals and behaviours.
6: Awareness and Tolerance of Physical Sensations*	• Develop awareness of role of physical sensations as core component of emotional experiences; • Promote increased tolerance of sensations, using interoceptive exposure.	• For different kinds of everyday decisions (including internal decisions), identify somatic responses at different points of the decision-making process. • Identify different appraisals of acute stress response during indecision or difficult decision-making: challenge vs. threat, practise reframing and re-appraisal of stress.

7: Interoceptive and situational exposures*	• Extending exposure to internal and external cues; • Building tolerance of intense and uncomfortable emotional experiences. *(Note: exposure is introduced early in the UP, but this module provides the opportunity for a sustained period of practice and reflection.)*	• Interoceptive/situational exposure distinction has less relevance for indecision, but distinguish between internal and external/social dimensions of decisions. • Exposure to internal decision-making, including self-initiated decisions and tolerance of decision-making without taking an "easy" escape or avoidance path. • Exposure to social dimensions of decision-making, including response prevention when perceived indecision cues are deliberately introduced (e.g., changing mind in front of other people). • Exposure and tolerance of aversive indecision itself, rather than avoidance or jumping to resolution of decision.
8: Relapse prevention	• General review, identifying strategies for maintaining and extending future gains; • Identifying strategies for responding to future difficulties.	• Review multiple functions and goals of being a decision-maker. • Review connection between decisions and the expression of character, virtues and values. • Review and consolidate difference between decisional outcomes and decision-making identity/process. • Identify and review positive and adaptive functions of indecision.

Note. Core modules in the UP are marked with an asterisk (*).

The UP and Clinical Indecision: Application, Limitations and Extensions

The third column in Table 8.1 outlines some ways in which the objectives and activities in the UP could be applied to clinical indecision. Some areas of application are more direct and obvious than others.

Emotion awareness. For example, Modules 3 and 4 address the experience of emotion. This component of therapy aims to help the client develop an awareness of the experience of different kinds of emotions, to tell them apart and what they signify, and to identify both adaptive and maladaptive emotional responses and regulation strategies. This has direct application to indecision, where the role of emotion in decision-making is often overlooked. The folk psychology of decision-making has absorbed the language of cognitive and rational processes, seeing decision-making as the weighing of costs and benefits (e.g., in Benjamin Franklin's 1772/1907 well-known letter to Joseph Priestly). The only relevant emotions, if any, are anticipated emotions. The emotions of being a decision-maker are given very little thought, consistent with the notion that decision-making is an instantaneous state change rather than a psychological activity (McCall, 1987). Identifying the emotions experienced in relation to the decision activity, and distinguishing these from emotions in relation to anticipated outcomes, would therefore be an important first step towards change.

The UP borrows techniques from mindfulness-based approaches in cognitive therapy to assist with the development of emotional awareness. Clients are encouraged to practise the non-judgmental and present-moment awareness of emotional experiences. These techniques would provide some helpful separation between the subjective experience of distress and other aspects of the decision-making activity and its contents. An increased awareness of emotions also provides an opportunity for the client and therapist to examine together how emotions about decision-making are appraised, and how these appraisals lead to adaptive or maladaptive responses and behaviours. There is also the opportunity to distinguish between different kinds of emotion, particularly agitation-related emotions (e.g., fear), which may be more relevant to process indecision, from the self-conscious emotions (e.g., shame) which may be more relevant to self-presentation indecision. "Following the emotion" may help clients to identify the kind of indecision being experienced and their functional bases.

The UP then aims to change the perception that emotions experienced during particular situations are inevitable, unpredictable and uncontrollable and therefore threatening. Instead, emotions are properly recast as an inherent part of experience operating alongside cognition and action. This module of the UP would therefore be directly applicable in addressing a clinical form of process indecision, where the intense negative emotional state in the decision-making activity feels like it is unregulated and causing impairment. Application to this form of indecision would be consistent with the UP's premise that problems emerge due to "increased emotional reactivity and

inefficient or deficient regulatory control that is coupled with a heightened tendency to view these experience as aversive" (Payne et al., 2014, p. 241).

Stress reappraisal. One extension to the UP at this point could be to apply the research about the reappraisal of acute stress introduced in Chapter 3. Jamieson and colleagues' line of line of studies applied a biopsychosocial model to distinguish between stress as a *challenge* and a *threat* depending on the perception of the availability of sufficient resources to handle the situational demands. Jamieson et al. (2012, 2013a, 2013b) showed, albeit in non-clinical populations, that reappraisal is effective when directed at acute stress-induced arousal. That is, people can learn to appraise stress as challenge rather than threat, where threat not an appropriate response. This has direct benefits such as a more adaptive physiological response and a decreased attentional bias to emotionally negative information which facilitates task performance.

In a lab setting, reappraisal was achieved by simple priming instructions not dissimilar to those used in Study 3. Participants were given an evolutionary psychophysiological explanation of how experience of stress could be functionally adaptive. Having this new understanding seemed to be effective for participants to reappraise their reaction towards the stressful event away from a threat response towards and an adaptive challenge response. This intervention could be easily adapted and extended in the therapy room to address inaccurate perceptions of incapacity and exaggerated threat during decision-making. Reappraising arousal as challenge also changes the relationship between the decision-maker and the decision problem. Rather than being "stuck" as a passive victim of the decision, or being compelled to overcompensate for perceived normative deficiencies, the decision-maker can use the psychophysiological arousal positively to engage with all three functional motivations.

CBT's shadow: Rationality in the UP. Mindfulness aside, some of the therapeutic techniques in relation to emotion and appraisal are heavily influenced by the UP's origins in cognitive therapy. Such techniques can imply that the cognitive control of emotion is possible and desirable. This message can have some unintended side-effects for the treatment of clinical indecision, but may also be beneficial.

Although usually not advertised as such, cognitive therapy relies on an expression of the subjective expected utility model in the challenging and correcting of maladaptive cognitions (J. S. Beck, 2011; Leahy, 2004). As Module 4 demonstrates, this aspect of therapy seeks to correct distorted beliefs which are based on the overvaluing of the probability of an aversive event happening, the overvaluing of the consequences of such an event, or both. This is usually applied to counter extreme

biases, such as in the case of social anxiety where a person might inaccurately perceive that the likelihood and consequences of being judged harshly by others to be invariably certain and catastrophic (Nelson, Lickel, Sy, Dixon, & Deacon, 2010). As such, gross distortions about one's capacity and competence as a decision-maker in self-presentation indecision might be amenable to this kind of cognitive challenge.

Adopting a rationally deliberative problem-solving approach to decision-making may also be appropriate where the client is having difficulty with informational processes in relation to the content and outcomes of decisions (Rassin, 2007; Horan, 1979; Gellatt, 1962; cf. Gellatt, 1989). In other words, an expected utility framework may help remedy outcome indecision, especially where extent of distortions of probability or value are substantial. This can be adapted for clinical practice combining decision-from-experience and collaborative empiricist lenses to encourage the client to gather evidence and iteratively form more accurate judgments (Dudley et al., 2011), like good intuitive Bayesians. Such tools may also counteract information-based decision paralysis by breaking down a problem into smaller components.

At the same time, the assumption of normative rationality in the UP can be dangerous when misapplied as a prescriptive theory. Some of these limitations have been discussed throughout this thesis, but there are particular concerns about how it might subtly subvert the course of therapy. Appraising decisional events and possibilities in terms of value and probability may contribute to an instrumentally rationalist and consequentialist mindset which values future and unrealised outcomes at the expense of present experience and other functional motivations.

Care must also be taken to avoid fuelling an epistemological bias towards certainty and optimisation which is already likely to be inflated in someone presenting with problems with decision-making. Therapeutic experiments with decision-making processes may provide opportunities to examine the role of adaptive ignorance and uncertainty for good decision-making (Smithson, 2008), and test the value of heuristics such as stopping rules (Gigerenzer & Gaissmaier, 2011). Moreover, the limits (and often the absurdity) of forecasting and optimisation can be discussed in therapy with reference to concepts like the "psychological immune system", which operates to soften both positive and negative experiences to make them less affectively intense than predicted (Wilson & Gilbert, 2005; Gilbert, Pinel, Wilson, Blumberg, & Wheatley, 1998).

Being a decision-maker. To counter some of the bias towards decisional outcomes, one accommodation to the UP would be to allow sufficient time at the

beginning of therapy to assess and understand how the client conceptualises decision-making and the identity and role of being a decision-maker. This is not just a depersonalised abstract activity, but requires the client inquiring and discovering their assumptions, motivations and practices as a decision-maker, both as they are and as they would like to be.

If the self-as-decision-maker is rigid or imbalanced, one early part of therapy may be to socialise the client into thinking about indecision in the context of decision-making as a multi-functional psychological activity. This may require shifting the focus away from the outcomes and consequences, decoupling decision and choice and instead looking at the decision-maker as a deciding agent within an interpersonal and social context.

Therapy must also go further to challenge and dismiss inaccurate beliefs and schemas about the self-as-decision-maker and the dysfunctional modes of coping which follow (Aardema & O'Connor, 2007). That is, there should not be any attempt to legitimise or normalise false beliefs about one's own decision impairments or an overgeneralised identity as an indecisive person. Rather, the therapist and client should develop ways to show that such beliefs and self-narratives are objectively discordant with the self-as-is. This includes addressing the self-doubt or distrust of oneself as a decision-maker (Mirels et al., 2002).

The course of therapy can productively challenge the client's absorption into maladaptive and threat-based imaginary possibilities and narratives. In doing so, confronting the overinvestment in the deciding self-as-could-be is to develop trust in the deciding self-as-is. An exploration of schema modes, as developed in schema therapy, may help the therapist and client to understand the core assumptions about the self which are contribute to clinical indecision (Young, Klosko, & Weishaar, 2003).

Exposure to decision-making and indecision. One part of the transdiagnostic treatment of clinical indecision is the intentional exposure of the client to not only the discomfort and dread of indecision, but also instances of everyday and active but uneventful decision-making. There is a three-fold rationale for such exposure. Firstly, it provides the basis for changing beliefs about the extent or frequency of the client's indecision and status as indecisive person by providing disconfirming evidence from instances of adaptive decision-making which might otherwise be unnoticed. Secondly, active exposure to decision-making creates a pool of experiential data from which the client and therapist can identify the particular contexts and antecedents which lead to indecision, recognising that these causes are usually epiphenomenal and may not

therefore be identifiable without practice and experience. Thirdly, exposure to the aversive experience of indecision helps build tolerance to it and challenges beliefs about incapacity, "losing control" or being defective as a decision-maker. The aim of therapy, after all, is not to avoid indecision. This would only contribute to the problem. One aim of therapy is instead to appraise indecision and the decision-making role more generally as tolerable, and sometimes even desirable, even if it remains a cognitively and emotionally taxing state.

This kind of ordinary exposure may be facilitated therapeutically by practising a mindful awareness of decision-making as a psychological activity. Practically, this requires an early experience-based awareness in therapy of the many forms and components of decision-making. It is also to realise that decision-making is *sometimes* difficult, but it is often easy, and most of the time unnoticed (Wansink & Sobal, 2007; Beach, 2010). This work may be assisted by exercises early in therapy which differentiate between different therapeutic outcomes which map onto different functionalist motivations, such as becoming better at decision-making compared with making better decisions. In-session and homework exercises can be used to guide clients' awareness of how a decision begins, builds, resolves and integrates with other experiences and goals. With practice, this should also extend to identifying the client's sense of agency and control as a decision-maker.

The familiar caution is that this awareness should not be brought about in a way that draws disproportionate attention to the decision content and outcomes. Such mindfulness may inadvertently overload the rationally deliberative, procedurally heavy and outcome-oriented "System 2" mode of thinking (Evans, 2008) which runs the risk of paradoxically increasing outcome indecision (cf. Weber & Johnson, 2009). Instead, mindfulness about decision-making means paying attention to the present-moment experience of deciding and its associated contextual and interoceptive cues (Dunn et al., 2010). It may mean realising that decision-making is often unpredictable and whimsical, and that "calculated choice" can often be a burdensome illusion (Langer, 1994).

However, because of the ubiquity of decisions and ordinary indecision, exposure as a component of therapy for clinical indecision is not as distinct an activity as it would be for many psychological problems or disorders (e.g., PTSD, agoraphobia or OCD). The standard distinction between interoceptive/imaginal exposure and *in vivo*/situational exposure is not particularly meaningful for indecision. Intentionally replaying an experience of aversive indecision in one's memory may help elicit details about contextual and interoceptive cues associated with the indecision experience.

However, such imaginal is unlikely to generate the level of arousal and discomfort needed to build greater tolerance and extinguish maladaptive conditioned responses.

Exposure, however, could be adapted to accommodate the distinction between the internal (intrapsychic) and external (interpersonal or social) dimensions of decision-making. Using this distinction, arbitrary as it is, as a therapeutic tool may provide a structure to identify the different components and underlying motivations of decision-making. Examples of these differences are shown in Table 8.2.

Table 8.2

Examples of Internal and External Dimensions of Decision-Making

Internal Dimensions of Decision-Making	External Dimensions of Decision-Making
• Choosing to choose (i.e., voluntarily taking on the role and responsibility of a decision-maker), especially in the absence of social/external pressure, or sanctions (cf. decisions which are imposed on the decision-maker); • Internally forming preferences (convictions) about decisional alternatives; • Evaluating options and anticipating outcomes; • Making a choice internally (without acting on it or communicating it); • Monitoring and regulating attention and cognitive load (keeping track of other needs and demands) and the experience of deciding or indecision (mindful decision-making).	• Taking on (or avoiding) a socially-defined decision-making role; • Communicating a choice in front of other people; • Making and acting on a choice on behalf of others; • Following often implicit social decision-making norms and conventions (e.g., trying to look more decisive); • Regulating and minimising outwards signs of indecision or dysregulation (including anticipatory behaviours such as pre-decision or delegation); • Explaining, justifying, defending the choice or decision processes to others.

Exposure, therefore, may involve the deliberate dismantling of decision-making to identify points of significant distress or weakness, as well as strengths. The work of therapy may then involve seeking out, practising and reflecting on these specific components of decision-making. For a client who has difficulty with the external and

social dimensions of deciding, this may mean intentionally making choices in front of or on behalf of other people (e.g., organising an event with friends and choosing the venue and activities).

Exposure activities could also exaggerate the kinds of behaviours that may be present in indecision. Such activities could include going to a restaurant with other people and deliberately and obviously taking a long time to order. In a busy public place, it might involve changing one's mind publicly or seeking out more (and perhaps unnecessary) questions about decisional alternatives before making a choice.

Alternatively, for a client with more difficulties in apprising themselves of decision-making agency, it might mean practising forming clear preferences even in the absence of action (e.g., to see what movies are showing at a local cinema and to choose — relatively quickly — what to watch, without necessarily then seeing it). These activities should always relate to the goals and motivations in relation to decision-making as developed by the client, and gradually progress up a hierarchy of intensity and discomfort.

Experiencing this discomfort, in the cognitive-behavioural tradition, is required so that the person can learn to tolerate it and challenge underlying assumptions about feared experiences. This means that the client must develop a tolerance for the aversive experience of indecision itself. Treatment would be counterproductive if it accidentally facilitates the false kind of decisiveness that is part of self-presentation indecision. As such, exposure may also involve having the client stay with the feeling of aversive indecision and the feelings of paralysis, dysregulation or irresolution for as long as possible until subjective distress begins to decrease without any additional decisional action.

Exposure and response-prevention (ERP) techniques which are used in the treatment of OCD (Himle & Franklin, 2009) could also be adapted for indecision, but with some care to ensure that they do not undermine the therapeutic relationship or exceed the client's tolerance. The client might be encouraged, within a safe context, to deliberately make "errors" in the decision-making process (e.g., not seeking out necessary information, saying things which make oneself look even more indecisive, or making an obviously bad choice). The client is then encouraged to tolerate and observe the consequences without engaging in reactive or down-regulating behaviours such as normative over-correction or avoidance.

In all such activities, the therapist should always be sensitive to examples of both adaptive and maladaptive decision-making by the client within the transference

relationship as an immediate *in vivo* example and source of information. The therapist should be very careful about not being drawn into being a substitute decision-maker for the client (for both decisions in real life or within therapy) or acting as a source of assurance or safety in the face of indecision.

Values and virtue. There is also room within therapy for indecision to develop a healthy decision-making self-as-could-be. Rather than as a source of persistent and inaccurate negative comparisons against unrealistic standards of decisiveness, a proper place of the self-as-could-be could be to provide a sense of direction, momentum and agency towards valued actions and goals. While this may not be possible or sought after by all clients, treatment of indecision is most complete if there is not just an absence of paralysis or distress when deciding but a positive and active engagement with decision-making as part of a person's broader goals and values.

Therapeutically, this may require the client to not only identify and distinguish between the different motivations involved in decision-making, but to acquire the psychological flexibility to move between these different mindsets and goals in the moment. The growing literature from Acceptance and Commitment Therapy (ACT) offers a conceptually compatible framework for developing such flexibility. ACT is well-known for its mindfulness techniques and its reluctance to intervene in the content of thought. However, an equally important part of ACT is its strong focus on the client's ability to take value-congruent steps towards desired goals even during difficult or unwanted experience (Hayes, Levin, Plumb-Vilardaga, Villatte, & Pistorello, 2013). Techniques and exercises from ACT which help the client to define valued life directions and take committed actions may be helpful in strengthening the relationship between decision-making, motivations and character (Luoma, Hayes, & Walser, 2007).

In the case of indecision, therefore, a more appropriate emphasis may be on recognising that life goals and valued living occurs through the process of making decisions well, and occasionally, making a good decision. Such decisions are not only found in the stressful, pivotal moments of life change, such as deciding to quit a job or to buy a house. Focusing on such big decisions could increase anxiety and threat perceptions about any kind of decision-making and indecision. Rather, choices are continually being made and acted upon in ways that shape a person's life towards desired goals and character over time. The importance and regularity of these ordinary decisions should not be overlooked.

Socialising the client to this accumulative and acquisitive approach to decision-making may help bring out motivated and functionally adaptive attitudes and appraisals

towards decisions. This would particularly apply to self-initiated and self-determined decisions. Therapy at this point could involve working with the client to find points of agency and influence throughout the entire decision-making activity. This might begin with identifying an unrealised personal value and then identifying ways in which committed action can be taken to reflect values. The emphasis should be that working towards values-congruent action is achieved through an ongoing process of making intentional decisions.

Adaptive indecision. Finally, in addition to reducing the dysfunction and distress of indecision, there may also be the opportunity to discover that indecision also can have an adaptive dimension. There may be times where it is functionally beneficial to create or maintain a state of indecision. It may be the case that the status quo of mindless decision-making is too comfortable and there is too little uncertainty for the situation to be interesting, engaging and motivating (Afifi & Weiner, 2004). Delaying choice and remaining exposed to the "madness" of facing the unknown and hesitating in the liminal space of indecision may sometimes be desirable as a hedonic experience or even a moment of flow (Schlösser et al., 2013; Csikszentmihalyi, 1991). Keeping decision events open or monitoring and selectively avoiding some difficult decisions may be conducive to wellbeing, creativity and the attainment of other goals (Radford et al., 1986; Janis & Mann, 1977; Cohen & Ferrari, 2010).

Indecision could also be an adaptive inhibitory response that prevents the "jumping to conclusions" (JTC) bias, often associated with delusional disorders (White & Mansell, 2009). JTC is characterised by early, rushed but resolute decisions made based on little evidence (Speechley, Whitman, & Woodward, 2010). By contrast therefore, struggling with a decision — in all its cognitive, affective, self-regulatory and self-presentational forms — may be appropriate and proportionate in the context of the decision-maker's motivations and capacity.

Towards Evidence-Based Practice

This transdiagnostic approach to indecision needs to be tested. Ideally, this would be achieved using randomised control trials (RCTs). Different control conditions would need to be used to test the effectiveness of this model. This would include both waitlisted controls (i.e., no active treatment) and treatment as usual in terms of psychological therapy which does not address indecision as a specific clinical problem (e.g., CBT for depression or OCD, or supportive counselling). Appropriate outcome measures would need to be developed which can identify change across different

aspects of decision-making: not only decreased distress and better decision outcomes, but also increased agency and adaptive motivations as a decision-maker.

However, in the absence of clinical evidence and experience, RCTs may be premature. Single-case analyses may be appropriate in the meantime to build the evidence base and to refine the UP model which has been suggested. Introducing randomisation to the single-case design may improve the credibility and rigour of the results (Kratochwill & Levin, 2010).

Epilogue

In 1951, Dag Hammarskjöld, the second Secretary-General to the United Nations, wrote in his journal (later translated and published as *Markings*) that:

> The man who is unwilling to accept the axiom that he who chooses one path is denied the others must try to persuade himself, I suppose, that the logical thing to do is to remain at the crossroads. But do not blame the man who does a path — nor commend him, either. (Hammarskjöld, 1963/2006, p. 67)

Hammarskjöld, who died while in office in a suspicious plane crash *en route* to ceasefire negotiations during the Congo Crisis, intimately knew both the costs of decision-making and the costs of indecision. In this reflection, he affirms the long-held position that it is better to choose than to be stuck like Buridan's Ass, let alone to rationalise such indecision. However, Hammarskjöld also points out that little, in fact, turns on just the outwards act of making of a decision, or not making a decision. Decision-making, and indecision, can only be given meaning according to its functions.

This may be according to the substantive merits of the decision, as Erling (1999) has interpreted this journal entry. It must also include the motivations, needs and capacity of the decision-maker, as this thesis has pointed out. For these reasons, this chapter has taken a cautious approach to indecision as a clinical problem. Indecision, as a normal and even adaptive state, should not be overpathologised. Nor can it continue to be neglected psychotherapeutically. Indecision not only gives rise to immediate distress but, in a sustained form, it can suppress person's agency and character, which occur through the ability to make decisions effectively.

How we understand indecision and indecisiveness, however, turns on how we choose to see the decision-making and the decision-maker. This is a choice for which continued reluctance, equivocation and avoidance cannot be sustained.

REFERENCES

Aardema, F., & O'Connor, K. (2007). The menace within: Obsessions and the self. *Journal of Cognitive Psychotherapy*, *21*(3), 182–197. https://doi.org/10.1891/088983907781494573

Abrams, D., & Hogg, M. A. (2004). Metatheory: Lessons from social identity research. *Personality and Social Psychology Review*, *8*(2), 98–106. https://doi.org/10.1207/s15327957pspr0802_2

Adobe Systems. (2011). Adobe Flash Professional (Version CS5.5). San Jose, CA: Adobe Systems.

Afifi, W. A., & Weiner, J. L. (2004). Toward a theory of motivated information management. *Communication Theory*, *14*(2), 167–190. https://doi.org/10.1111/j.1468-2885.2004.tb00310.x

American Psychiatric Association. (1980). *Diagnostic and statistical manual of mental disorders: DSM-III*. Washington, DC: American Psychiatric Association.

American Psychiatric Association. (1987). *Diagnostic and statistical manual of mental disorders: DSM-III-R*. Washington, DC: American Psychiatric Association.

American Psychiatric Association. (1998). *Diagnostic and statistical manual of mental disorders: DSM-IV*. Washington, DC: American Psychiatric Association.

American Psychiatric Association. (2000). *Diagnostic and statistical manual of mental disorders: DSM-IV-TR* (4th ed., text revision). Washington, DC: American Psychiatric Association.

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders: DSM-5*. Arlington, VA: American Psychiatric Association.

Anderson, C. J. (2003). The psychology of doing nothing: Forms of decision avoidance result from reason and emotion. *Psychological Bulletin*, *129*(1), 139–167. https://doi.org/10.1037/0033-2909.129.1.139

Andrade, E. B., & Van Boven, L. (2010). Feelings not forgone: Underestimating affective reactions to what does not happen. *Psychological Science*, *21*(5), 706–711. https://doi.org/10.1177/0956797610368809

Appelhans, B. M., & Luecken, L. J. (2006). Heart rate variability as an index of regulated emotional responding. *Review of General Psychology*, *10*(3), 229–240. https://doi.org/10.1037/1089-2680.10.3.229

Appelhans, B. M., & Luecken, L. J. (2008). Heart rate variability and pain: Associations of two interrelated homeostatic processes. *Biological Psychology*, *77*(2), 174–182. https://doi.org/10.1016/j.biopsycho.2007.10.004

Arbuckle, J. L. (2011). Amos (Version 20.0). Chicago, IL: IBM SPSS.

Ariely, D. (2009). *Predictably irrational: The hidden forces that shape our decisions* (Rev. ed.). New York, NY: Harper Collins Publishers.

Ariely, D., & Zakay, D. (2001). A timely account of the role of duration in decision making. *Acta Psychologica*, *108*(2), 187–207. https://doi.org/10.1016/S0001-6918(01)00034-8

Arkin, R. A. (1981). Self-presentation styles. In J. T. Tedeschi (Ed.), *Impression management theory and social psychological research* (pp. 311–334). New York, NY: Academic Press.

Arntz, A., Rauner, M., & Van den Hout, M. (1995). "If I feel anxious, there must be danger": Ex-consequentia reasoning in inferring danger in anxiety disorders. *Behaviour Research and Therapy*, *33*(8), 917–925. https://doi.org/10.1016/0005-7967(95)00032-S

Arthy, D. (1997). Governance of the vocational personality in the origins of vocational guidance. *Journal of Career Development*, *24*(2), 115–132. https://doi.org/10.1023/A:1025001313655

Australian Bureau of Statistics. (2016). Australian Standard Classification of Cultural and Ethnic Groups. Retrieved from http://www.abs.gov.au/AUSSTATS/abs@.nsf/Latestproducts/1249.0Main%20Features12016

Avnet, T., & Higgins, E. T. (2003). Locomotion, assessment, and regulatory fit: Value transfer from "how" to "what." *Journal of Experimental Social Psychology*, *39*(5), 525–530. https://doi.org/10.1016/S0022-1031(03)00027-1

Avrahami, J., & Kareev, Y. (2011). The role of impulses in shaping decisions. *Journal of Behavioral Decision Making*, *24*(5), 515–529. https://doi.org/10.1002/bdm.707

Baagøe, J. (2010). *Alea*. Retrieved from https://github.com/coverslide/node-alea

Bacanli, F. (2006). Personality characteristics as predictors of personal indecisiveness. *Journal of Career Development*, *32*(4), 320–332. https://doi.org/10.1177/0894845305282941

Balota, D. A., & Yap, M. J. (2011). Moving beyond the mean in studies of mental chronometry: The power of response time distributional analyses. *Current*

Directions in Psychological Science, *20*(3), 160–166. https://doi.org/10.1177/0963721411408885

Bar-Anan, Y., Wilson, T. D., & Gilbert, D. T. (2009). The feeling of uncertainty intensifies affective reactions. *Emotion*, *9*(1), 123–127. https://doi.org/doi:10.1037/a0014607

Bar-Haim, Y., Lamy, D., Pergamin, L., Bakermans-Kranenburg, M. J., & van IJzendoorn, M. H. (2007). Threat-related attentional bias in anxious and nonanxious individuals: A meta-analytic study. *Psychological Bulletin*, *133*(1), 1–24. https://doi.org/10.1037/0033-2909.133.1.1

Barkley-Levenson, E. E., & Fox, C. R. (2016). The surprising relationship between indecisiveness and impulsivity. *Personality and Individual Differences*, *90*, 1–6. https://doi.org/10.1016/j.paid.2015.10.030

Barlow, D. H., Allen, L. B., & Choate, M. L. (2004). Toward a unified treatment for emotional disorders. *Behavior Therapy*, *35*(2), 205–230. https://doi.org/10.1016/S0005-7894(04)80036-4

Baron, J. (1994). Nonconsequentialist decisions. *Behavioral and Brain Sciences*, *17*(1), 1–10. https://doi.org/10.1017/S0140525X0003301X

Baron, J. (2008). *Thinking and deciding* (4th ed). New York, NY: Cambridge University Press.

Baron, J., & Weber, E. U. (2001). Introduction. In E. U. Weber, J. Baron, & G. Loomes (Eds.), *Conflict and tradeoffs in decision making* (pp. 1–24). Cambridge, UK: Cambridge University Press.

Barrett, L. F., Quigley, K. S., Bliss-Moreau, E., & Aronson, K. R. (2004). Interoceptive sensitivity and self-reports of emotional experience. *Journal of Personality and Social Psychology*, *87*(5), 684–697. https://doi.org/10.1037/0022-3514.87.5.684

Bar-Tal, Y. (1994). The effect on mundane decision-making of the need and ability to achieve cognitive structure. *European Journal of Personality*, *8*(1), 45–58. https://doi.org/10.1002/per.2410080105

Batson, C. D., Engel, C. L., & Fridell, S. R. (1999). Value judgments: Testing the somatic-marker hypothesis using false physiological feedback. *Personality and Social Psychology Bulletin*, *25*(8), 1021–1032. https://doi.org/10.1177/01461672992511009

Batstra, L., & Frances, A. (2012). Diagnostic inflation: Causes and a suggested cure. *Journal of Nervous and Mental Disease*, *200*(6), 474–479. https://doi.org/10.1097/NMD.0b013e318257c4a2

Bauman, Z. (2008). *Does ethics have a chance in a world of consumers?* Cambridge, MA: Harvard University Press.

Baumeister, R. F. (1998). The self. In D. T. Gilbert, S. T. Fiske, & L. Gardner (Eds.), *The handbook of social psychology* (4th ed., Vol. 1 and 2, pp. 680–740). New York, NY: McGraw-Hill.

Baumeister, R. F. (2002). Ego depletion and self-control failure: An energy model of the self's executive function. *Self and Identity*, *1*(2), 129–136. https://doi.org/10.1080/152988602317319302

Baumeister, R. F., & Showers, C. J. (1986). A review of paradoxical performance effects: Choking under pressure in sports and mental tests. *European Journal of Social Psychology*, *16*(4), 361–383. https://doi.org/10.1002/ejsp.2420160405

Beach, L. R. (2010). *The psychology of narrative thought: How the stories we tell ourselves shape our lives*. Bloomington, IN: Xlibris Corporation.

Beattie, J., Baron, J., Hershey, J. C., & Spranca, M. D. (1994). Psychological determinants of decision attitude. *Journal of Behavioral Decision Making*, *7*(2), 129–144. https://doi.org/10.1002/bdm.3960070206

Bechara, A., Damasio, A. R., Damasio, H., & Anderson, S. W. (1994). Insensitivity to future consequences following damage to human prefrontal cortex. *Cognition*, *50*(1–3), 7–15. https://doi.org/10.1016/0010-0277(94)90018-3

Bechara, A., Damasio, H., Tranel, D., & Damasio, A. R. (2005). The Iowa Gambling Task and the somatic marker hypothesis: Some questions and answers. *Trends in Cognitive Sciences*, *9*(4), 159–162. https://doi.org/16/j.tics.2005.02.002

Bechara, A., & Naqvi, N. (2004). Listening to your heart: Interoceptive awareness as a gateway to feeling. *Nature Neuroscience*, *7*(2), 102–103. https://doi.org/10.1038/nn0204-102

Beck, A. T., & Clark, D. A. (1997). An information processing model of anxiety: Automatic and strategic processes. *Behaviour Research and Therapy*, *35*(1), 49–58. https://doi.org/10.1016/S0005-7967(96)00069-1

Beck, A. T., Ward, C. H., Mendelson, M., Mock, J., & Erbaugh, J. (1961). An inventory for measuring depression. *Archives of General Psychiatry*, *4*(6), 561–571. https://doi.org/10.1001/archpsyc.1961.01710120031004

Beck, J. S. (2011). *Cognitive behavior therapy: Basics and beyond* (2nd ed.). New York, NY: Guilford Press.

Beck, L. A., & Clark, M. S. (2009). Choosing to enter or avoid diagnostic social situations. *Psychological Science*, *20*(9), 1175–1181. https://doi.org/10.1111/j.1467-9280.2009.02420.x

Beilock, S. L., & Carr, T. H. (2001). On the fragility of skilled performance: What governs choking under pressure? *Journal of Experimental Psychology. General*, *130*(4), 701–725.

Bellah, R. N., Madsen, R., Sullivan, W. M., Swidler, A., & Tipton, S. M. (1985). *Habits of the heart: Individualism and commitment in American life*. Berkeley, CA: University of California Press.

Bennington, G. (2011). A moment of madness: Derrida's Kierkegaard. *Oxford Literary Review*, *33*(1), 103–127. https://doi.org/10.3366/olr.2011.0008

Berenbaum, H., Bredemeier, K., & Thompson, R. J. (2008). Intolerance of uncertainty: Exploring its dimensionality and associations with need for cognitive closure, psychopathology, and personality. *Journal of Anxiety Disorders*, *22*(1), 117–125. https://doi.org/10.1016/j.janxdis.2007.01.004

Bergler, E. (1940). Four types of neurotic indecisiveness. *Psychoanalytic Quarterly*, *9*, 481–492.

Berkman, E. T., Lieberman, M. D., & Gable, S. L. (2009). BIS, BAS, and response conflict: Testing predictions of the revised reinforcement sensitivity theory. *Personality and Individual Differences*, *46*(5–6), 586–591. https://doi.org/10.1016/j.paid.2008.12.015

Berzonsky, M. D., & Ferrari, J. R. (1996). Identity orientation and decisional strategies. *Personality and Individual Differences*, *20*(5), 597–606. https://doi.org/10.1016/0191-8869(96)00001-3

Bilchick, K. C., & Berger, R. D. (2006). Heart rate variability. *Journal of Cardiovascular Electrophysiology*, *17*(6), 691–694. https://doi.org/10.1111/j.1540-8167.2006.00501.x

Bishop, S. J. (2008). Trait anxiety and impoverished prefrontal control of attention. *Nature Neuroscience*, *12*(1), 92–98. https://doi.org/10.1038/nn.2242

Blascovich, J. (2008). Challenge and threat. In A. J. Elliot (Ed.), *Handbook of approach and avoidance motivation* (pp. 431–446). New York, NY: Psychology Press.

Blascovich, J., & Mendes, W. B. (2000). Challenge and threat appraisals: The role of affective cues. In J. Forgas (Ed.), *Feeling and thinking: The role of affect in social cognition* (pp. 59–82). Cambridge, UK: Cambridge University Press.

Blessing, K. (2013). What's done, is done: Descartes on resoluteness and regret. *Essays in Philosophy*, *14*(2), 141–161. https://doi.org/10.7710/1526-0569.1469

Botvinick, M. M., & Rosen, Z. B. (2008). Anticipation of cognitive demand during decision-making. *Psychological Research*, *73*(6), 835–842. https://doi.org/10.1007/s00426-008-0197-8

Brassfield, S. (2013). Descartes and the danger of irresolution. *Essays in Philosophy*, *14*(2), 162–178. https://doi.org/10.7710/1526-0569.1470

Bredemeier, K., & Berenbaum, H. (2008). Intolerance of uncertainty and perceived threat. *Behaviour Research and Therapy*, *46*(1), 28–38. https://doi.org/10.1016/j.brat.2007.09.006

Briñol, P., & DeMarree, K. G. (Eds.). (2012). *Social metacognition*. New York, NY: Psychology Press.

Brooks, M. E. (2011). Management indecision. *Management Decision*, *49*(5), 683–693. https://doi.org/10.1108/00251741111130788

Bruner, J. S. (1986). *Actual minds, possible worlds*. Cambridge, MA: Harvard University Press.

Buechler, S. (1998). The analyst's experience of loneliness. *Contemporary Psychoanalysis*, *34*(1), 91–113. https://doi.org/10.1080/00107530.1998.10746350

Bullens, L., van Harreveld, F., & Förster, J. (2011). Keeping one's options open: The detrimental consequences of decision reversibility. *Journal of Experimental Social Psychology*, *47*(4), 800–805. https://doi.org/10.1016/j.jesp.2011.02.012

Bullis, J. R., Fortune, M. R., Farchione, T. J., & Barlow, D. H. (2014). A preliminary investigation of the long-term outcome of the Unified Protocol for Transdiagnostic Treatment of Emotional Disorders. *Comprehensive Psychiatry*, *55*(8), 1920–1927. https://doi.org/10.1016/j.comppsych.2014.07.016

Burka, J. B., & Yuen, L. M. (2008). *Procrastination: Why you do it, what to do about it now* (Rev. ed.). Cambridge, MA: Da Capo Press.

Burkeman, O. (2013). *The antidote: Happiness for people who can't stand positive thinking*. Melbourne: Text Publishing.

Busemeyer, J. R., & Diederich, A. (2002). Survey of decision field theory. *Mathematical Social Sciences*, *43*(3), 345–370. https://doi.org/10.1016/S0165-4896(02)00016-1

Busemeyer, J., & Townsend, J. (1993). Decision field theory: A dynamic-cognitive approach to decision making in an uncertain environment. *Psychological Review*, *100*(3), 432–459. https://doi.org/http://dx.doi.org/10.1037/0033-295X.100.3.432

Camilleri, A. R., & Newell, B. R. (2013). The long and short of it: Closing the description-experience "gap" by taking the long-run view. *Cognition*, *126*(1), 54–71. https://doi.org/10.1016/j.cognition.2012.09.001

Campos, J. J. (2007). Foreword. In J. L. Tracy, R. W. Robins, & J. P. Tangney (Eds.), *The self-conscious emotions: Theory and research* (pp. ix–xii). New York, NY: The Guilford Press.

Cantor, N. (1990). From thought to behavior: "Having" and "doing" in the study of personality and cognition. *American Psychologist*, *45*(6), 735–750. https://doi.org/10.1037/0003-066X.45.6.735

Carver, C. S., & White, T. L. (1994). Behavioral inhibition, behavioral activation, and affective responses to impending reward and punishment: The BIS/BAS Scales. *Journal of Personality and Social Psychology*, *67*(2), 319–333. https://doi.org/10.1037/0022-3514.67.2.319

Cattell, R. B. (1966). Patterns of change: Measurement in relation to state dimension, trait change, lability, and process concepts. In R. B. Cattell (Ed.), *Handbook of multivariate experimental psychology*. Chicago, IL: Rand McNally.

Cerniglia, R. P., Horenstein, D., & Christensen, E. W. (1978). Group decision-making and self-management in the treatment of psychiatric patients. *Journal of Clinical Psychology*, *34*(2), 489–493. https://doi.org/10.1002/1097-4679(197804)34:2<489::AID-JCLP2270340251>3.0.CO;2-V

Charan, R. (2001). Conquering a culture of indecision. *Harvard Business Review*, *79*(4), 74–82.

Chartrand, J. M., Robbins, S. B., Morrill, W. H., & Boggs, K. (1990). Development and validation of the Career Factors Inventory. *Journal of Counseling Psychology*, *37*(4), 491–501. https://doi.org/10.1037/0022-0167.37.4.491

Chartrand, J. M., Rose, M. L., Elliott, T. R., Marmarosh, C., & Caldwell, S. (1993). Peeling back the onion: Personality, problem solving, and career decision-making style correlates of career indecision. *Journal of Career Assessment*, *1*(1), 66–82. https://doi.org/10.1177/106907279300100107

Clarke, P., MacLeod, C., & Shirazee, N. (2008). Prepared for the worst: Readiness to acquire threat bias and susceptibility to elevate trait anxiety. *Emotion*, *8*(1), 47–57. https://doi.org/10.1037/1528-3542.8.1.47

Clarkson, J. J., Valente, M. J., Leone, C., & Tormala, Z. L. (2013). Motivated reflection on attitude-inconsistent information: An exploration of the role of fear of

invalidity in self-persuasion. *Personality and Social Psychology Bulletin*, *39*(12), 1559–1570. https://doi.org/10.1177/0146167213497983

Cocia, I. R., Uscătescu, L. C., & Rusu, A. S. (2012). Attention bias to threat in anxiety-prone individuals: Evidence from disengagement, but not engagement bias using cardiac vagal tone. *Journal of Psychophysiology*, *26*(2), 74–82. https://doi.org/10.1027/0269-8803/a000069

Cohen, J. R., & Ferrari, J. R. (2010). Take some time to think this over: The relation between rumination, indecision, and creativity. *Creativity Research Journal*, *22*(1), 68–73. https://doi.org/10.1080/10400410903579601

Combatalade, D. C. (2010, February). Basics of heart rate variability applied to psychophysiology. Thought Technology Ltd.

Connolly, T., & Zeelenberg, M. (2002). Regret in decision making. *Current Directions in Psychological Science*, *11*(6), 212–216. https://doi.org/10.1111/1467-8721.00203

Corr, P. J. (2004). Reinforcement sensitivity theory and personality. *Neuroscience & Biobehavioral Reviews*, *28*(3), 317–332. https://doi.org/10.1016/j.neubiorev.2004.01.005

Costello, A. B., & Osborne, J. W. (2005). Best practices in exploratory factor analysis: Four recommendations for getting the most from your analysis. *Practical Assessment, Research & Evaluation*, *10*(7), 1–9.

Craig, A. D. (2002). How do you feel? Interoception: The sense of the physiological condition of the body. *Nature Reviews Neuroscience*, *3*(8), 655–666. https://doi.org/10.1038/nrn894

Crawford, J., Cayley, C., Lovibond, P. F., Wilson, P. H., & Hartley, C. (2011). Percentile norms and accompanying interval estimates from an Australian general adult population sample for self-report mood scales (BAI, BDI, CRSD, CES-D, DASS, DASS-21, STAI-X, STAI-Y, SRDS, and SRAS). *Australian Psychologist*, *46*(1), 3–14. https://doi.org/10.1111/j.1742-9544.2010.00003.x

Critchley, H. D., Wiens, S., Rotshtein, P., Ohman, A., & Dolan, R. J. (2004). Neural systems supporting interoceptive awareness. *Nature Neuroscience*, *7*(2), 189–195. https://doi.org/10.1038/nn1176

Crites, J. O. (1969). *Vocational psychology: The study of vocational behavior and development*. New York, NY: McGraw-Hill.

Croizet, J.-C., Després, G., Gauzins, M.-E., Huguet, P., Leyens, J.-P., & Méot, A. (2004). Stereotype threat undermines intellectual performance by triggering a

disruptive mental load. *Personality and Social Psychology Bulletin*, *30*(6), 721–731. https://doi.org/10.1177/0146167204263961

Crone, E. A., Somsen, R. J. M., Beek, B. V., & Van Der Molena, M. W. (2004). Heart rate and skin conductance analysis of antecendents and consequences of decision making. *Psychophysiology*, *41*(4), 531–540. https://doi.org/10.1111/j.1469-8986.2004.00197.x

Csikszentmihalyi, M. (1991). *Flow: The psychology of optimal experience*. New York, NY: HarperPerennial.

Dalal, R. S., & Brooks, M. E. (2014). Individual differences in decision-making skill and style. In S. Highhouse, R. S. Dalal, & E. Salas (Eds.), *Judgment and decision making at work* (pp. 80–101). New York, NY: Routledge.

Damasio, A. R. (1994). *Descartes' error: Emotion, reason, and the human brain*. London, UK: Penguin.

Damasio, A. R., Everitt, B. J., & Bishop, D. (1996). The somatic marker hypothesis and the possible functions of the prefrontal cortex. *Philosophical Transactions of the Royal Society of London. Series B: Biological Sciences*, *351*(1346), 1413–1420. https://doi.org/10.1098/rstb.1996.0125

Danan, E., Guerdjikova, A., & Zimper, A. (2012). Indecisiveness aversion and preference for commitment. *Theory and Decision*, *72*(1), 1–13. https://doi.org/10.1007/s11238-011-9254-7

Danziger, S., Levav, J., & Avnaim-Pesso, L. (2011). Extraneous factors in judicial decisions. *Proceedings of the National Academy of Sciences*, *108*(17), 6889–6892. https://doi.org/10.1073/pnas.1018033108

Dar-Nimrod, I., Rawn, C. D., Lehman, D. R., & Schwartz, B. (2009). The maximization paradox: The costs of seeking alternatives. *Personality and Individual Differences*, *46*(5–6), 631–635. https://doi.org/10.1016/j.paid.2009.01.007

Davey, G. C. L., Hampton, J., Farrell, J., & Davidson, S. (1992). Some characteristics of worrying: Evidence for worrying and anxiety as separate constructs. *Personality and Individual Differences*, *13*(2), 133–147. https://doi.org/10.1016/0191-8869(92)90036-O

de Hooge, I. E., Zeelenberg, M., & Breugelmans, S. M. (2010). Restore and protect motivations following shame. *Cognition & Emotion*, *24*(1), 111–127. https://doi.org/10.1080/02699930802584466

de Hooge, I. E., Zeelenberg, M., & Breugelmans, S. M. (2011). A functionalist account of shame-induced behaviour. *Cognition & Emotion*, *25*(5), 939–946. https://doi.org/10.1080/02699931.2010.516909

Delaney, J. P. A., & Brodie, D. A. (2000). Effects of short-term psychological stress on the time and frequency domains of heart-rate variability. *Perceptual and Motor Skills*, *91*(2), 515–524. https://doi.org/10.2466/pms.2000.91.2.515

Denis, J.-L., Dompierre, G., Langley, A., & Rouleau, L. (2011). Escalating indecision: Between reification and strategic ambiguity. *Organization Science*, *22*(1), 225–244. https://doi.org/10.1287/orsc.1090.0501

Denning, P. J. (2007). The choice uncertainty principle. *Communications of the ACM*, *50*(11), 9–14. https://doi.org/10.1145/1297797.1297809

Dercum, F. X. (1917). The interpretation of the neuroses: Biologic, pathologic and clinical considerations, together with an evaluation of the psychogenic factors. *Journal of the American Medical Association*, *68*(17), 1223. https://doi.org/10.1001/jama.1917.04270040211001

Derrida, J. (1978). *Writing and difference*. (A. Bass, Trans.). London, UK: Routledge.

Derrida, J. (1988). *Limited Inc*. Evanston, IL: Northwestern University Press.

Descartes, R. (2008). *Discourse on the method of rightly conducting one's reason and of seeking truth*. (J. Veitch, Trans.). Retrieved from https://www.gutenberg.org/ebooks/59 (Original work published 1637).

Descartes, R. (1989). *The passions of the soul*. (S. Voss, Trans.). Indianapolis, IN: Hackett (Original work published 1649).

Dhar, R. (1997). Consumer preference for a no-choice option. *Journal of Consumer Research*, *24*(2), 215–231. https://doi.org/10.1086/209506

Di Fabio, A. (2006). Decisional procrastination correlates: Personality traits, self-esteem or perception of cognitive failure? *International Journal for Educational and Vocational Guidance*, *6*(2), 109–122. https://doi.org/10.1007/s10775-006-9000-9

Di Fabio, A., Palazzeschi, L., Asulin-Peretz, L., & Gati, I. (2013). Career indecision versus indecisiveness: Associations with personality traits and emotional intelligence. *Journal of Career Assessment*, *21*(1), 42–56. https://doi.org/10.1177/1069072712454698

Di Schiena, R., Luminet, O., Chang, B., & Philippot, P. (2013). Why are depressive individuals indecisive? Different modes of rumination account for indecision in non-clinical depression. *Cognitive Therapy and Research*, *37*(4), 713–724. https://doi.org/10.1007/s10608-012-9517-9

Díaz-Morales, J. F., Cohen, J. R., & Ferrari, J. R. (2008). An integrated view of personality styles related to avoidant procrastination. *Personality and Individual Differences*, *45*(6), 554–558. https://doi.org/10.1016/j.paid.2008.06.018

Díaz-Morales, J. F., Ferrari, J. R., & Cohen, J. R. (2008). Indecision and avoidant procrastination: The role of morningness-eveningness and time perspective in chronic delay lifestyles. *Journal of General Psychology*, *135*(3), 228–240. https://doi.org/10.3200/GENP.135.3.228-240

Didden, R., Sigafoos, J., O'Reilly, M. F., Lancioni, G. E., & Sturmey, P. (2007). A Multisite Cross-Cultural Replication of Upper's (1974) Unsuccessful Self-Treatment of Writer's Block. *Journal of Applied Behavior Analysis*, *40*(4), 773–773. https://doi.org/10.1901/jaba.2007.773

Dijk, C., & de Jong, P. J. (2012). Blushing-fearful individuals overestimate the costs and probability of their blushing. *Behaviour Research and Therapy*, *50*(2), 158–162. https://doi.org/10.1016/j.brat.2011.11.006

Dijksterhuis, A., & van Knippenberg, A. (2000). Behavioral indecision: Effects of self-focus on automatic behavior. *Social Cognition*, *18*(1), 55–74. https://doi.org/10.1521/soco.2000.18.1.55

DiStefano, C., Zhu, M., & Mîndrilă, D. (2009). Understanding and using factor scores: Considerations for the applied researcher. *Practical Assessment, Research & Evaluation*, *14*(20), 1–20.

Domschke, K., Stevens, S., Pfleiderer, B., & Gerlach, A. L. (2010). Interoceptive sensitivity in anxiety and anxiety disorders: An overview and integration of neurobiological findings. *Clinical Psychology Review*, *30*(1), 1–11. https://doi.org/16/j.cpr.2009.08.008

Dr. Seuss. (1990). *Oh, the places you'll go!* New York, NY: Random House.

Druss, R. G. (1976). Indecision and orality. *International Review of Psycho-Analysis*, *3*(2), 203–207.

Dryden, W. (2012). Dealing with procrastination: The REBT approach and a demonstration session. *Journal of Rational-Emotive & Cognitive-Behavior Therapy*, *30*(4), 264–281. https://doi.org/10.1007/s10942-012-0152-x

Dryden, W., & Sabelus, S. (2010). The perceived credibility of two rational emotive behavior therapy rationales for the treatment of academic procrastination. *Journal of Rational-Emotive & Cognitive-Behavior Therapy*, *30*(1), 1–24. https://doi.org/10.1007/s10942-010-0123-z

Dudley, R., Kuyken, W., & Padesky, C. A. (2011). Disorder specific and trans-diagnostic case conceptualisation. *Clinical Psychology Review*, *31*(2), 213–224. https://doi.org/10.1016/j.cpr.2010.07.005

Dugas, M. J., Hedayati, M., Karavidas, A., Buhr, K., Francis, K., & Phillips, N. A. (2005). Intolerance of uncertainty and information processing: Evidence of biased recall and interpretations. *Cognitive Therapy and Research*, *29*(1), 57–70. https://doi.org/10.1007/s10608-005-1648-9

Dunn, B. D., Dalgleish, T., & Lawrence, A. D. (2006). The somatic marker hypothesis: A critical evaluation. *Neuroscience & Biobehavioral Reviews*, *30*(2), 239–271. https://doi.org/16/j.neubiorev.2005.07.001

Dunn, B. D., Galton, H. C., Morgan, R., Evans, D., Oliver, C., Meyer, M., … Dalgleish, T. (2010). Listening to Your Heart. *Psychological Science*, *21*(12), 1835–1844. https://doi.org/10.1177/0956797610389191

Egloff, B., & Hock, M. (2001). Interactive effects of state anxiety and trait anxiety on emotional Stroop interference. *Personality and Individual Differences*, *31*(6), 875–882. https://doi.org/10.1016/S0191-8869(00)00188-4

Eichler, S., & Katkin, E. S. (1994). The relationship between cardiovascular reactivity and heartbeat detection. *Psychophysiology*, *31*(3), 229–234. https://doi.org/10.1111/j.1469-8986.1994.tb02211.x

Elaydi, R. (2006). Construct development and measurement of indecisiveness. *Management Decision*, *44*(10), 1363–1376. https://doi.org/10.1108/00251740610715696

Eliot, T. S. (1971). *Four quartets*. New York, NY: Houghton Mifflin Harcourt (Original work published 1940).

Ellard, K. K., Fairholme, C. P., Boisseau, C. L., Farchione, T. J., & Barlow, D. H. (2010). Unified Protocol for the Transdiagnostic Treatment of Emotional Disorders: Protocol development and initial outcome data. *Cognitive and Behavioral Practice*, *17*(1), 88–101. https://doi.org/10.1016/j.cbpra.2009.06.002

Ellsworth, P. C., & Scherer, K. R. (2003). Appraisal processes in emotion. In R. J. Davidson, K. R. Scherer, & H. H. Goldsmith (Eds.), *Handbook of affective sciences* (pp. 572–595). New York, NY: Oxford University Press.

Endler, N. S., & Kocovski, N. L. (2001). State and trait anxiety revisited. *Journal of Anxiety Disorders*, *15*(3), 231–245. https://doi.org/10.1016/S0887-6185(01)00060-3

Erling, B. (1999). *A reader's guide to Dag Hammarskjöld's Waymarks*. St. Peter, MN: Gustavus Adolphus College.

Etkin, A., Klemenhagen, K. C., Dudman, J. T., Rogan, M. T., Hen, R., Kandel, E. R., & Hirsch, J. (2004). Individual differences in trait anxiety predict the response of the basolateral amygdala to unconsciously processed fearful faces. *Neuron*, *44*(6), 1043–1055. https://doi.org/10.1016/j.neuron.2004.12.006

Evans, J. S. B. T. (2008). Dual-processing accounts of reasoning, judgment, and social cognition. *Annual Review of Psychology*, *59*(1), 255–278. https://doi.org/10.1146/annurev.psych.59.103006.093629

Eysenck, M. W., Derakshan, N., Santos, R., & Calvo, M. G. (2007). Anxiety and cognitive performance: Attentional control theory. *Emotion*, *7*(2), 336–353. https://doi.org/10.1037/1528-3542.7.2.336

Farchione, T. J., Fairholme, C. P., Ellard, K. K., Boisseau, C. L., Thompson-Hollands, J., Carl, J. R., … Barlow, D. H. (2012). Unified protocol for transdiagnostic treatment of emotional disorders: A randomized controlled trial. *Behavior Therapy*, *43*(3), 666–678. https://doi.org/10.1016/j.beth.2012.01.001

Feldman, D. C. (2003). The antecedents and consequences of early career indecision among young adults. *Human Resource Management Review*, *13*(3), 499–531. https://doi.org/10.1016/S1053-4822(03)00048-2

Fernie, B. A., Spada, M. M., Nikčević, A. V., Georgiou, G. A., & Moneta, G. B. (2009). Metacognitive beliefs about procrastination: Development and concurrent validity of a self-report questionnaire. *Journal of Cognitive Psychotherapy*, *23*(4), 283–293. https://doi.org/10.1891/0889-8391.23.4.283

Ferrari, J., & Pychyl, T. (2007). Regulating speed, accuracy and judgments by indecisives: Effects of frequent choices on self-regulation depletion. *Personality and Individual Differences*, *42*(4), 777–787. https://doi.org/10.1016/j.paid.2006.09.001

Ferrari, J. R. (1991). Compulsive procrastination: Some self-reported characteristics. *Psychological Reports*, *68*(2), 455–458. https://doi.org/10.2466/pr0.1991.68.2.455

Ferrari, J. R. (2001). Procrastination as self-regulation failure of performance: Effects of cognitive load, self-awareness, and time limits on "working best under pressure." *European Journal of Personality*, *15*(5), 391–406. https://doi.org/10.1002/per.413

Ferrari, J. R., & Dovidio, J. F. (2000). Examining behavioral processes in indecision: Decisional procrastination and decision-making style. *Journal of Research in Personality*, *34*(1), 127–137. https://doi.org/10.1006/jrpe.1999.2247

Ferrari, J. R., & Dovidio, J. F. (2001). Behavioral information search by indecisives. *Personality and Individual Differences*, *30*(7), 1113–1123. https://doi.org/10.1016/S0191-8869(00)00094-5

Ferrari, L., Nota, L., & Soresi, S. (2010). Time perspective and indecision in young and older adolescents. *British Journal of Guidance & Counselling*, *38*(1), 61–82. https://doi.org/10.1080/03069880903408612

Festinger, L., & Carlsmith, J. M. (1959). Cognitive consequences of forced compliance. *Journal of Abnormal and Social Psychology*, *58*(2), 203–210. https://doi.org/10.1037/h0041593

Fieulaine, N., Apostolidis, T., & Zimbardo, P. G. (2009). *Development and validation of a short form of the Zimbardo Time Perspective Inventory*. Manuscript submitted for publication.

Figner, B., Mackinlay, R. J., Wilkening, F., & Weber, E. U. (2009). Affective and deliberative processes in risky choice: Age differences in risk taking in the Columbia Card Task. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, *35*(3), 709–730. https://doi.org/10.1037/a0014983

Follette, W. C., & Houts, A. C. (1996). Models of scientific progress and the role of theory in taxonomy development: A case study of the DSM. *Journal of Consulting and Clinical Psychology*, *64*(6), 1120–1132. https://doi.org/10.1037/0022-006X.64.6.1120

Formicelli, M. A. (2009). *Aristotle's theory of prohairesis and its significance for accounts of human action and practical reasoning* (PhD dissertation). Boston College, Boston, MA.

Fouad, N., Cotter, E. W., & Kantamneni, N. (2009). The effectiveness of a career decision-making course. *Journal of Career Assessment*, *17*(3), 338–347. https://doi.org/10.1177/1069072708330678

Franklin, B. (1907). *The writings of Benjamin Franklin*. (A. H. Smyth, Ed.) (Vol. 10). New York, NY: Macmillan (Original work published 1772).

Freeman, J. B., & Ambady, N. (2010). MouseTracker: Software for studying real-time mental processing using a computer mouse-tracking method. *Behavior Research Methods*, *42*(1), 226–241. https://doi.org/10.3758/BRM.42.1.226

Freud, S. (1955). Notes upon a case of obsessional neurosis. In J. Strachey (Ed.), *The standard edition of the complete psychological works of Sigmund Freud* (Vol. 10). London, UK: Hogarth Press (Original work published 1909).

Freud, S. (1959). Character and anal erotism. In J. Strachey (Ed.), *The standard edition of the complete psychological works of Sigmund Freud* (Vol. 9). London, UK: Hogarth Press (Original work published 1908).

Frost, R. (1931). *Mountain interval*. Rahway, NJ: Holt (Original work published 1916).

Frost, R. O., & Gross, R. C. (1993). The hoarding of possessions. *Behaviour Research and Therapy*, *31*(4), 367–381. https://doi.org/10.1016/0005-7967(93)90094-B

Frost, R. O., & Shows, D. L. (1993). The nature and measurement of compulsive indecisiveness. *Behaviour Research and Therapy*, *31*(7), 683–692. https://doi.org/10.1016/0005-7967(93)90121-A

Frost, R. O., Tolin, D. F., Steketee, G., & Oh, M. (2011). Indecisiveness and hoarding. *International Journal of Cognitive Therapy*, *4*(3), 253–262. https://doi.org/10.1521/ijct.2011.4.3.253

Fuqua, D. R., & Hartman, B. W. (1983). Differential diagnosis and treatment of career indecision. *Personnel and Guidance Journal*, *62*(1), 27–29. https://doi.org/10.1111/j.2164-4918.1983.tb00112.x

Fuqua, D. R., Newman, J. L., & Seaworth, T. B. (1988). Relation of state and trait anxiety to different components of career indecision. *Journal of Counseling Psychology*, *35*(2), 154–158. https://doi.org/10.1037/0022-0167.35.2.154

Furman, D. J., Waugh, C. E., Bhattacharjee, K., Thompson, R. J., & Gotlib, I. H. (2013). Interoceptive awareness, positive affect, and decision making in major depressive disorder. *Journal of Affective Disorders*. https://doi.org/10.1016/j.jad.2013.06.044

Furnham, A. (1995). The just world, charitable giving and attitudes to disability. *Personality and Individual Differences*, *19*(4), 577–583. https://doi.org/10.1016/0191-8869(95)00090-S

Gaag, L. C., Renooij, S., Steeneveld, W., & Hogeveen, H. (2009). When in doubt ... Be indecisive. In *Proceedings of the 10th European Conference on Symbolic and Quantitative Approaches to Reasoning with Uncertainty* (pp. 518–529). Verona, Italy: Springer-Verlag.

Gangestad, S. W., & Snyder, M. (2000). Self-monitoring: Appraisal and reappraisal. *Psychological Bulletin*, *126*(4), 530–555. https://doi.org/10.1037/0033-2909.126.4.530

Gati, I., & Asher, I. (2001). Prescreening, in-depth exploration, and choice: From decision theory to career counseling practice. *Career Development Quarterly*, *50*(2), 140–157. https://doi.org/10.1002/j.2161-0045.2001.tb00979.x

Gati, I., Krausz, M., & Osipow, S. H. (1996). A taxonomy of difficulties in career decision making. *Journal of Counseling Psychology*, *43*(4), 510–526. https://doi.org/10.1037/0022-0167.43.4.510

Gayton, W. F., Clavin, R. H., Clavin, S. L., & Broida, J. (1994). Further validation of the Indecisiveness Scale. *Psychological Reports*, *75*(3f), 1631–1634. https://doi.org/10.2466/pr0.1994.75.3f.1631

Geisler, F. C. M., & Kubiak, T. (2009). Heart rate variability predicts self-control in goal pursuit. *European Journal of Personality*, *23*(8), 623–633. https://doi.org/10.1002/per.727

Geisler, F. C. M., Vennewald, N., Kubiak, T., & Weber, H. (2010). The impact of heart rate variability on subjective well-being is mediated by emotion regulation. *Personality and Individual Differences*, *49*(7), 723–728. https://doi.org/10.1016/j.paid.2010.06.015

Gelatt, H. B. (1962). Decision-making: A conceptual frame of reference for counseling. *Journal of Counseling Psychology*, *9*(3), 240–245. https://doi.org/10.1037/h0046720

Gelatt, H. B. (1989). Positive uncertainty: A new decision-making framework for counseling. *Journal of Counseling Psychology*, *36*(2), 252–256. https://doi.org/10.1037/0022-0167.36.2.252

Germeijs, V., & De Boeck, P. (2002). A measurement scale for indecisiveness and its relationship to career indecision and other types of indecision. *European Journal of Psychological Assessment*, *18*(2), 113–122. https://doi.org/10.1027//1015-5759.18.2.113

Germeijs, V., & De Boeck, P. (2003). Career indecision: Three factors from decision theory. *Journal of Vocational Behavior*, *62*(1), 11–25. https://doi.org/10.1016/S0001-8791(02)00055-6

Germeijs, V., & Verschueren, K. (2011). Indecisiveness: Specificity and predictive validity. *European Journal of Personality*, *25*(5), 295–305. https://doi.org/10.1002/per.786

Gigerenzer, G. (1998). Surrogates for theories. *Theory & Psychology*, *8*(2), 195–204. https://doi.org/10.1177/0959354398082006

Gigerenzer, G. (2010). *Rationality for mortals: How people cope with uncertainty*. Oxford, UK: Oxford University Press.

Gigerenzer, G., & Gaissmaier, W. (2011). Heuristic decision making. *Annual Review of Psychology*, *62*(1), 451–482. https://doi.org/10.1146/annurev-psych-120709-145346

Gigerenzer, G., & Goldstein, D. G. (1996). Reasoning the fast and frugal way: Models of bounded rationality. *Psychological Review*, *103*(4), 650–669. https://doi.org/10.1037/0033-295X.103.4.650

Gilbert, D. T., Pinel, E. C., Wilson, T. D., Blumberg, S. J., & Wheatley, T. P. (1998). Immune neglect: A source of durability bias in affective forecasting. *Journal of Personality and Social Psychology*, *75*(3), 617–638. https://doi.org/10.1037/0022-3514.75.3.617

Glenn, J. (2001). Robert Frost's "The Road Not Taken": Childhood, psychoanalytic symbolism, and creativity. *Psychoanalytic Study of the Child*, *56*(6), 361–378.

Gorman, J. M., & Sloan, R. P. (2000). Heart rate variability in depressive and anxiety disorders. *American Heart Journal*, *140*(4), S77–S83. https://doi.org/10.1067/mhj.2000.109981

Goschke, T. (2014). Dysfunctions of decision-making and cognitive control as transdiagnostic mechanisms of mental disorders: Advances, gaps, and needs in current research. *International Journal of Methods in Psychiatric Research*, *23*(S1), 41–57. https://doi.org/10.1002/mpr.1410

Gosling, S. D., Rentfrow, P. J., & Swann, W. B. (2003). A very brief measure of the Big-Five personality domains. *Journal of Research in Personality*, *37*(6), 504–528. https://doi.org/10.1016/S0092-6566(03)00046-1

Gray, J. A. (1970). The psychophysiological basis of introversion-extraversion. *Behaviour Research and Therapy*, *8*(3), 249–266. https://doi.org/10.1016/0005-7967(70)90069-0

Gray, J. A., & McNaughton, N. (2000). *The neuropsychology of anxiety: An enquiry into the functions of the septo-hippocampal system* (2nd ed). Oxford, UK: Oxford University Press.

Greenberg, D. L., Rice, H. J., Cooper, J. J., Cabeza, R., Rubin, D. C., & LaBar, K. S. (2005). Co-activation of the amygdala, hippocampus and inferior frontal gyrus during autobiographical memory retrieval. *Neuropsychologia*, *43*(5), 659–674. https://doi.org/10.1016/j.neuropsychologia.2004.09.002

Greifeneder, R., Scheibehenne, B., & Kleber, N. (2010). Less may be more when choosing is difficult: Choice complexity and too much choice. *Acta Psychologica*, *133*(1), 45–50. https://doi.org/10.1016/j.actpsy.2009.08.005

Guichard, J. (2009). Self-constructing. *Journal of Vocational Behavior*, *75*(3), 251–258. https://doi.org/10.1016/j.jvb.2009.03.004

Haidt, J., & Kesebir, S. (2010). Morality. In S. T. Fiske, D. T. Gilbert, & G. Lindzey (Eds.), *Handbook of Social Psychology* (5th ed., Vol. 2, pp. 797–832). Hoboken, NJ: John Wiley & Sons, Inc.

Halevy, N., Cohen, T. R., Chou, E. Y., Katz, J. J., & Panter, A. T. (2014). Mental models at work: Cognitive causes and consequences of conflict in organizations. *Personality and Social Psychology Bulletin*, *40*(1), 92–110. https://doi.org/10.1177/0146167213506468

Halevy, N., & Katz, J. J. (2013). Conflict templates: Thinking through interdependence. *Current Directions in Psychological Science*, *22*(3), 217–224. https://doi.org/10.1177/0963721412474296

Halkjelsvik, T., & Rise, J. (2015). Persistence motives in irrational decisions to complete a boring task. *Personality and Social Psychology Bulletin*, *41*(1), 90–102. https://doi.org/10.1177/0146167214557008

Hallinan, B., & Striphas, T. (2016). Recommended for you: The Netflix Prize and the production of algorithmic culture. *New Media & Society*, *18*(1), 117–137. https://doi.org/10.1177/1461444814538646

Hamilton, M. (1960). A rating scale for depression. *Journal of Neurology, Neurosurgery & Psychiatry*, *23*(1), 56–62. https://doi.org/10.1136/jnnp.23.1.56

Hamilton, R., Vohs, K. D., Sellier, A.-L., & Meyvis, T. (2011). Being of two minds: Switching mindsets exhausts self-regulatory resources. *Organizational Behavior and Human Decision Processes*, *115*(1), 13–24. https://doi.org/10.1016/j.obhdp.2010.11.005

Hammarskjöld, D. (2006). *Markings*. (L. Sjöberg & W. H. Auden, Trans.). New York, NY: Vintage Books (Original work published 1963).

Hammer, C. (2010). *Regulatory focus and decisional delay: Chronic indecision caused by a prevention focus* (PhD dissertation). DePaul University, Chicago, IL.

Hartley, C. A., & Phelps, E. A. (2012). Anxiety and decision-making. *Biological Psychiatry*, *72*(2), 113–118. https://doi.org/10.1016/j.biopsych.2011.12.027

Hastie, R. (2001). Problems for judgment and decision making. *Annual Review of Psychology*, *52*(1), 653–683. https://doi.org/10.1146/annurev.psych.52.1.653

Hayes, S. C., Levin, M. E., Plumb-Vilardaga, J., Villatte, J. L., & Pistorello, J. (2013). Acceptance and Commitment Therapy and contextual behavioral science:

Examining the progress of a distinctive model of behavioral and cognitive therapy. *Behavior Therapy*, *44*(2), 180–198. https://doi.org/10.1016/j.beth.2009.08.002

Heereman, J., & Walla, P. (2011). Stress, uncertainty and decision confidence. *Applied Psychophysiology and Biofeedback*, *36*(4), 273–279. https://doi.org/10.1007/s10484-011-9167-9

Heeren, A., Mogoașe, C., Philippot, P., & McNally, R. J. (2015). Attention bias modification for social anxiety: A systematic review and meta-analysis. *Clinical Psychology Review*, *40*, 76–90. https://doi.org/10.1016/j.cpr.2015.06.001

Henrich, J., Heine, S. J., & Norenzayan, A. (2010). Most people are not WEIRD. *Nature*, *466*(7302), 29–29. https://doi.org/10.1038/466029a

Henry, J. D., & Crawford, J. R. (2005). The short-form version of the Depression Anxiety Stress Scales (DASS-21): Construct validity and normative data in a large non-clinical sample. *British Journal of Clinical Psychology*, *44*(2), 227–239. https://doi.org/10.1348/014466505X29657

Hertwig, R., & Erev, I. (2009). The description–experience gap in risky choice. *Trends in Cognitive Sciences*, *13*(12), 517–523. https://doi.org/10.1016/j.tics.2009.09.004

Higgins, E. T. (1987). Self-discrepancy: A theory relating self and affect. *Psychological Review*, *94*(3), 319–340. https://doi.org/10.1037/0033-295X.94.3.319

Higgins, E. T. (1997). Beyond pleasure and pain. *American Psychologist*, *52*(12), 1280–1300. https://doi.org/10.1037/0003-066X.52.12.1280

Higgins, E. T., Kruglanski, A. W., & Pierro, A. (2003). Regulatory mode: Locomotion and assessment as distinct orientations. *Advances in Experimental Social Psychology*, *35*, 293–344. https://doi.org/10.1016/S0065-2601(03)01005-0

Himle, M. B., & Franklin, M. E. (2009). The more you do it, the easier it gets: Exposure and response prevention for OCD. *Cognitive and Behavioral Practice*, *16*(1), 29–39. https://doi.org/10.1016/j.cbpra.2008.03.002

Hodgson, R. J., & Rachman, S. (1977). Obsessional-compulsive complaints. *Behaviour Research and Therapy*, *15*(5), 389–395. https://doi.org/10.1016/0005-7967(77)90042-0

Holland, J. L., & Holland, J. E. (1977). Vocational indecision: More evidence and speculation. *Journal of Counseling Psychology*, *24*(5), 404–414. https://doi.org/10.1037/0022-0167.24.5.404

Horan, J. J. (1979). *Counseling for effective decision making: A cognitive-behavioral perspective*. North Scituate, MA: Duxbury.

Hotaling, J. M., & Busemeyer, J. R. (2012). DFT-D: A cognitive-dynamical model of dynamic decision making. *Synthese*, *189*(S1), 67–80. https://doi.org/10.1007/s11229-012-0157-0

Hsee, C. K., & Hastie, R. (2006). Decision and experience: Why don't we choose what makes us happy? *Trends in Cognitive Sciences*, *10*(1), 31–37. https://doi.org/10.1016/j.tics.2005.11.007

Hughes, J. W., & Stoney, C. M. (2000). Depressed mood is related to high-frequency heart rate variability during stressors. *Psychosomatic Medicine*, *62*(6), 796–803.

Hui, C. M., Fok, H. K., & Bond, M. H. (2009). Who feels more ambivalence? Linking dialectical thinking to mixed emotions. *Personality and Individual Differences*, *46*(4), 493–498. https://doi.org/10.1016/j.paid.2008.11.022

Huys, Q. J. M., Guitart-Masip, M., Dolan, R. J., & Dayan, P. (2015). Decision-theoretic psychiatry. *Clinical Psychological Science*, *3*(3), 400–421. https://doi.org/10.1177/2167702614562040

Inbar, Y., Botti, S., & Hanko, K. (2011). Decision speed and choice regret: When haste feels like waste. *Journal of Experimental Social Psychology*, *47*(3), 533–540. https://doi.org/10.1016/j.jesp.2011.01.011

Inzlicht, M., & Schmader, T. (2012). Introduction. In M. Inzlicht & T. Schmader (Eds.), *Stereotype threat: Theory, process, and application* (pp. 3–14). New York, NY: Oxford University Press.

Inzlicht, M., Schmeichel, B. J., & Macrae, C. N. (2014). Why self-control seems (but may not be) limited. *Trends in Cognitive Sciences*, *18*(3), 127–133. https://doi.org/10.1016/j.tics.2013.12.009

Iyengar, S. S., & DeVoe, S. E. (2003). Rethinking the value of choice: Considering cultural mediators of intrinsic motivation. In V. Murphy-Berman & J. J. Berman (Eds.), *Cross-cultural differences in perspectives on the self* (pp. 146–191). Lincoln, NE: University of Nebraska Press.

Iyengar, S. S., & Lepper, M. R. (2000). When choice is demotivating: Can one desire too much of a good thing? *Journal of Personality and Social Psychology*, *79*(6), 995–1006. https://doi.org/10.1037/0022-3514.79.6.995

Jamieson, J. P., Mendes, W. B., & Nock, M. K. (2013). Improving acute stress responses: The power of reappraisal. *Current Directions in Psychological Science*, *22*(1), 51–56. https://doi.org/10.1177/0963721412461500

Jamieson, J. P., Nock, M. K., & Mendes, W. B. (2012). Mind over matter: Reappraising arousal improves cardiovascular and cognitive responses to stress. *Journal of*

Experimental Psychology: General, *141*(3), 417–422. https://doi.org/10.1037/a0025719

Jamieson, J. P., Nock, M. K., & Mendes, W. B. (2013). Changing the conceptualization of stress in social anxiety disorder: Affective and physiological consequences. *Clinical Psychological Science*, *1*(4), 363–374. https://doi.org/10.1177/2167702613482119

Janis, I. L., & Mann, L. (1976). Coping with decisional conflict: An analysis of how stress affects decision-making suggests interventions to improve the process. *American Scientist*, *64*(6), 657–667.

Janis, I. L., & Mann, L. (1977). *Decision making: A psychological analysis of conflict, choice, and commitment*. New York, NY: Free Press.

Jeong, H. G., & Drolet, A. (2016). Variety-seeking as an emotional coping strategy for chronically indecisive consumers. *Marketing Letters*, *27*(1), 55–62. https://doi.org/10.1007/s11002-014-9300-7

Jessup, R. K., Veinott, E. S., Todd, P. M., & Busemeyer, J. R. (2009). Leaving the store empty-handed: Testing explanations for the too-much-choice effect using decision field theory. *Psychology and Marketing*, *26*(3), 299–320. https://doi.org/10.1002/mar.20274

John, P. (2007). Updating P300: An integrative theory of P3a and P3b. *Clinical Neurophysiology*, *118*(10), 2128–2148. https://doi.org/10.1016/j.clinph.2007.04.019

Kahneman, D. (1997). New challenges to the rationality assumption. *Legal Theory*, *3*(2), 105–124. https://doi.org/10.1017/S1352325200000689

Kahneman, D. (2000). Evaluation by moments: Past and future. In D. Kahneman & A. Tversky (Eds.), *Choices, values, and frames* (pp. 693–708). Cambridge, UK: Cambridge University Press.

Kahneman, D., & Riis, J. (2005). Living, and thinking about it: Two perspectives on life. In F. A. Huppert, N. Baylis, & B. Keverne (Eds.), *The science of well-being* (pp. 284–305). Oxford, UK: Oxford University Press.

Kahneman, D., Tursky, B., Shapiro, D., & Crider, A. (1969). Pupillary, heart rate, and skin resistance changes during a mental task. *Journal of Experimental Psychology*, *79*(1), 164–167. https://doi.org/10.1037/h0026952

Kahneman, D., & Tversky, A. (1984). Choices, values, and frames. *American Psychologist*, *39*(4), 341–350. https://doi.org/10.1037/0003-066X.39.4.341

Kara, T., Nykodym, J., & Somers, V. K. (2003). Heart rate variability: Back to the beginning. *Journal of Cardiovascular Electrophysiology*, *14*(8), 800–802. https://doi.org/10.1046/j.1540-8167.2003.03258.x

Kelman, M. (1979). Choice and utility. *Wisconsin Law Review*, *1979*, 769–797.

Kenny, D. A. (2011, September 11). Respecification of latent variable models. Retrieved from http://davidakenny.net/cm/respec.htm

Klayman, J., & Ha, Y. (1987). Confirmation, disconfirmation, and information in hypothesis testing. *Psychological Review*, *94*(2), 211–228. https://doi.org/10.1037/0033-295X.94.2.211

Kleiger, R. E., Stein, P. K., & Bigger, J. T. (2005). Heart rate variability: Measurement and clinical utility. *Annals of Noninvasive Electrocardiology*, *10*(1), 88–101. https://doi.org/10.1111/j.1542-474X.2005.10101.x

Klinger, E., Gregoire, K. C., & Barta, S. G. (1973). Physiological correlates of mental activity: Eye movements, alpha, and heart rate during imagining, suppression, concentration, search, and choice. *Psychophysiology*, *10*(5), 471–477. https://doi.org/10.1111/j.1469-8986.1973.tb00534.x

Knaus, W. J. (2010). *End procrastination now! Get it done with a proven psychological approach*. New York, NY: McGraw-Hill.

Koroboki, E., Zakopoulos, N., Manios, E., Rotas, V., Papadimitriou, G., & Papageorgiou, C. (2010). Interoceptive awareness in essential hypertension. *International Journal of Psychophysiology*, *78*(2), 158–162. https://doi.org/16/j.ijpsycho.2010.07.003

Koster, E. H. W., Crombez, G., Verschuere, B., Van Damme, S., & Wiersema, J. R. (2006). Components of attentional bias to threat in high trait anxiety: Facilitated engagement, impaired disengagement, and attentional avoidance. *Behaviour Research and Therapy*, *44*(12), 1757–1771. https://doi.org/10.1016/j.brat.2005.12.011

Kovalewsky, P. J. (1887). Folie du doute. *The British Journal of Psychiatry*, *33*(142), 209–218. https://doi.org/10.1192/bjp.33.142.209

Kratochwill, T. R., & Levin, J. R. (2010). Enhancing the scientific credibility of single-case intervention research: Randomization to the rescue. *Psychological Methods*, *15*(2), 124–144. https://doi.org/10.1037/a0017736

Krieshok, T. S. (1998). An anti-introspectivist view of career decision making. *The Career Development Quarterly*, *46*(3), 210–229. https://doi.org/10.1002/j.2161-0045.1998.tb00697.x

Kruglanski, A. W., Thompson, E. P., Higgins, E. T., Atash, M. N., Pierro, A., Shah, J. Y., & Spiegel, S. (2000). To "do the right thing" or to "just do it": Locomotion and assessment as distinct self-regulatory imperatives. *Journal of Personality and Social Psychology*, *79*(5), 793–815. https://doi.org/10.1037/0022-3514.79.5.793

Krumboltz, J. D. (1992). The wisdom of indecision. *Journal of Vocational Behavior*, *41*(3), 239–244. https://doi.org/10.1016/0001-8791(92)90025-U

Lakoff, G., & Johnson, M. (2003). *Metaphors we live by*. Chicago, IL: University of Chicago Press.

Lamprell, M. (1989). The paralysis of indecision. *British Journal of Psychotherapy*, *6*(2), 227–234. https://doi.org/10.1111/j.1752-0118.1989.tb01280.x

Langer, E. (1994). The illusion of calculated decisions. In R. C. Schank & E. Langer (Eds.), *Beliefs, reasoning, and decision making: Psycho-logic in honor of Bob Abelson* (pp. 33–53). Hillsdale, NJ: Lawrence Erlbaum.

Langer, E. J. (1975). The illusion of control. *Journal of Personality and Social Psychology*, *32*(2), 311–328. https://doi.org/10.1037/0022-3514.32.2.311

László, J. (2008). *The science of stories: An introduction to narrative psychology*. London, UK: Routledge.

Leahy, R. L. (Ed.). (2006). *Contemporary cognitive therapy: theory, research, and practice*. New York, NY: Guilford Press.

Legrand du Saulle, H. (1875). *La folie du doute (avec délire du toucher)*. Paris, France: Adrien Delahaye.

Leibniz, G. W. (1985). *Theodicy: Essays on the goodness of God, the freedom of man, and the origin of evil*. (A. Farrer, Ed.). La Salle, IL: Open Court (Original work published 1710).

Lenton, A. P., & Francesconi, M. (2011). Too much of a good thing? Variety is confusing in mate choice. *Biology Letters*, *7*(4), 528–531. https://doi.org/10.1098/rsbl.2011.0098

Lewicka, M. (1997). Rational or uncommitted? Depression and indecisiveness in interpersonal decision making. *Scandinavian Journal of Psychology*, *38*(3), 227–236. https://doi.org/10.1111/1467-9450.00031

Leykin, Y., & DeRubeis, R. J. (2010). Decision-making styles and depressive symptomatology: Development of the Decision Styles Questionnaire. *Judgment and Decision Making*, *5*(7), 506–515.

Leykin, Y., Roberts, C. S., & DeRubeis, R. J. (2011). Decision-making and depressive symptomatology. *Cognitive Therapy and Research*, *35*(4), 333–341. https://doi.org/10.1007/s10608-010-9308-0

Li, L. M. W., Masuda, T., & Russell, M. J. (2014). The influence of cultural lay beliefs: Dialecticism and indecisiveness in European Canadians and Hong Kong Chinese. *Personality and Individual Differences*, *68*, 6–12. https://doi.org/10.1016/j.paid.2014.03.047

Lichtenstein, S., & Slovic, P. (Eds.). (2006). *The construction of preference*. Cambridge, UK: Cambridge University Press.

Lin, Y. (1998). *The importance of living*. New York, NY: Willam Morrow (Original work published 1934).

Lipkus, I. (1991). The construction and preliminary validation of a global belief in a just world scale and the exploratory analysis of the multidimensional belief in a just world scale. *Personality and Individual Differences*, *12*(11), 1171–1178. https://doi.org/10.1016/0191-8869(91)90081-L

Loewenstein, G. F., Weber, E. U., Hsee, C. K., & Welch, N. (2001). Risk as feelings. *Psychological Bulletin*, *127*(2), 267–286. https://doi.org/10.1037/0033-2909.127.2.267

Lovibond, S. H., & Lovibond, P. F. (1995). *Manual for the Depression Anxiety Stress Scales* (2nd ed.). Sydney: Psychology Foundation.

Ludvig, E. A., & Spetch, M. L. (2011). Of black swans and tossed coins: Is the description-experience gap in risky choice limited to rare events? *PLoS ONE*, *6*(6), e20262. https://doi.org/10.1371/journal.pone.0020262

Luoma, J. B., Hayes, S. C., & Walser, R. D. (2007). *Learning ACT: An acceptance & commitment therapy skills-training manual for therapists*. Oakland, CA: New Harbinger.

Luque-Casado, A., Perales, J. C., Cárdenas, D., & Sanabria, D. (2016). Heart rate variability and cognitive processing: The autonomic response to task demands. *Biological Psychology*, *113*, 83–90. https://doi.org/10.1016/j.biopsycho.2015.11.013

Mackay, D. G., Shafto, M., Taylor, J. K., Marian, D. E., Abrams, L., & Dyer, J. R. (2004). Relations between emotion, memory, and attention: Evidence from taboo Stroop, lexical decision, and immediate memory tasks. *Memory & Cognition*, *32*(3), 474–488. https://doi.org/10.3758/BF03195840

MacLeish, A. (1952). *Freedom is the right to choose: An inquiry into the battle for the American future*. London, UK: The Bodley Head.

MacLeod, C., & Mathews, A. (2012). Cognitive bias modification approaches to anxiety. *Annual Review of Clinical Psychology*, *8*(1), 189–217. https://doi.org/10.1146/annurev-clinpsy-032511-143052

Mann, L. (1982). *Flinders Decision Making Questionnaire II* (Unpublished questionnaire). Flinders University, Adelaide, SA.

Mann, L., Burnett, P., Radford, M., & Ford, S. (1997). The Melbourne decision making questionnaire: An instrument for measuring patterns for coping with decisional conflict. *Journal of Behavioral Decision Making*, *10*(1), 1–19. https://doi.org/10.1002/(SICI)1099-0771(199703)10:1<1::AID-BDM242>3.0.CO;2-X

Mann, L., Janis, I. L., & Chaplin, R. (1969). Effects of anticipation of forthcoming information on predecisional processes. *Journal of Personality and Social Psychology*, *11*(1), 10–16. https://doi.org/10.1037/h0026967

Mansbridge, J. (2012). On the importance of getting things done. *PS: Political Science & Politics*, *45*(1), 1–8. https://doi.org/10.1017/S104909651100165X

Mansell, W., Harvey, A., Watkins, E. R., & Shafran, R. (2008). Cognitive behavioral processes across psychological disorders: A review of the utility and validity of the transdiagnostic approach. *International Journal of Cognitive Therapy*, *1*(3), 181–191. https://doi.org/10.1521/ijct.2008.1.3.181

Mansell, W., Harvey, A., Watkins, E., & Shafran, R. (2009). Conceptual foundations of the transdiagnostic approach to CBT. *Journal of Cognitive Psychotherapy*, *23*(1), 6–19. https://doi.org/10.1891/0889-8391.23.1.6

March, J. G. (1991). Exploration and exploitation in organizational learning. *Organization Science*, *2*(1), 71–87. https://doi.org/10.1287/orsc.2.1.71

Marí-Beffa, P., Hayes, A. E., Machado, L., & Hindle, J. V. (2005). Lack of inhibition in Parkinson's disease: Evidence from a lexical decision task. *Neuropsychologia*, *43*(4), 638–646. https://doi.org/10.1016/j.neuropsychologia.2004.07.006

Markman, A. B., Maddox, W. T., & Worthy, D. A. (2006). Choking and excelling under pressure. *Psychological Science*, *17*(11), 944–948. https://doi.org/10.1111/j.1467-9280.2006.01809.x

Martin, M., Williams, R. M., & Clark, D. M. (1991). Does anxiety lead to selective processing of threat-related information? *Behaviour Research and Therapy*, *29*(2), 147–160. https://doi.org/10.1016/0005-7967(91)90043-3

Matzke, D., & Wagenmakers, E.-J. (2009). Psychological interpretation of the ex-Gaussian and shifted Wald parameters: A diffusion model analysis. *Psychonomic Bulletin & Review*, *16*(5), 798–817. https://doi.org/10.3758/PBR.16.5.798

McAuley, E., Duncan, T. E., & Russell, D. W. (1992). Measuring causal attributions: The Revised Causal Dimension Scale (CDSII). *Personality and Social Psychology Bulletin*, *18*(5), 566–573. https://doi.org/10.1177/0146167292185006

McCall, S. (1987). Decision. *Canadian Journal of Philosophy*, *17*(2), 261–288. https://doi.org/10.1080/00455091.1987.10716436

McCall, S. (1994). *A model of the universe: Space-time, probability, and decision*. Oxford, UK: Oxford University Press.

McEvoy, P. M., Nathan, P., & Norton, P. J. (2009). Efficacy of transdiagnostic treatments: A review of published outcome studies and future research directions. *Journal of Cognitive Psychotherapy*, *23*(1), 20–33. https://doi.org/10.1891/0889-8391.23.1.20

McHugh, R. K., Murray, H. W., & Barlow, D. H. (2009). Balancing fidelity and adaptation in the dissemination of empirically-supported treatments: The promise of transdiagnostic interventions. *Behaviour Research and Therapy*, *47*(11), 946–953. https://doi.org/10.1016/j.brat.2009.07.005

McKinstry, C., Dale, R., & Spivey, M. J. (2008). Action dynamics reveal parallel competition in decision making. *Psychological Science*, *19*(1), 22–24. https://doi.org/10.1111/j.1467-9280.2008.02041.x

McLean, K. C., & Pasupathi, M. (2011). Old, new, borrowed, blue? The emergence and retention of personal meaning in autobiographical storytelling. *Journal of Personality*, *79*(1), 135–164. https://doi.org/10.1111/j.1467-6494.2010.00676.x

Medford, N. (2012). Emotion and the unreal self: Depersonalization disorder and de-affectualization. *Emotion Review*, *4*(2), 139–144. https://doi.org/10.1177/1754073911430135

Mellers, B. A. (2000). Choice and the relative pleasure of consequences. *Psychological Bulletin*, *126*(6), 910–924. https://doi.org/10.1037/0033-2909.126.6.910

Mellers, B. A., & McGraw, A. P. (2001). Anticipated emotions as guides to choice. *Current Directions in Psychological Science*, *10*(6), 210–214. https://doi.org/10.1111/1467-8721.00151

Menand, L. (2001). *The metaphysical club: A story of ideas in America*. New York, NY: Farrar, Straus and Giroux.

Mendonca, J. D., & Siess, T. F. (1976). Counseling for indecisiveness: Problem-solving and anxiety-management training. *Journal of Counseling Psychology*, *23*(4), 339–347. https://doi.org/10.1037/0022-0167.23.4.339

Mik, E. (2016). The erosion of autonomy in online consumer transactions. *Law, Innovation and Technology*, *8*(1), 1–38. https://doi.org/10.1080/17579961.2016.1161893

Milgram, N. (Noach), & Tenne, R. (2000). Personality correlates of decisional and task avoidant procrastination. *European Journal of Personality*, *14*(2), 141–156. https://doi.org/10.1002/(SICI)1099-0984(200003/04)14:2<141::AID-PER369>3.0.CO;2-V

Milton, J., Naik, P., Chan, C., & Campbell, S. A. (2010). Indecision in neural decision making models. *Mathematical Modelling of Natural Phenomena*, *5*(2), 125–145. https://doi.org/10.1051/mmnp/20105205

Mirels, H. L., Greblo, P., & Dean, J. B. (2002). Judgmental self-doubt: Beliefs about one's judgmental prowess. *Personality and Individual Differences*, *33*(5), 741–758. https://doi.org/10.1016/S0191-8869(01)00189-1

Mochon, D. (2013). Single-Option Aversion. *Journal of Consumer Research*, *40*(3), 555–566. https://doi.org/10.1086/671343

Molière. (1673). *The imaginary invalid*. (C. H. Heron, Trans.). Project Gutenberg. Retrieved from http://www.gutenberg.org/ebooks/9070

Moses, E. B., & Barlow, D. H. (2006). A new unified treatment approach for emotional disorders based on emotion science. *Current Directions in Psychological Science*, *15*(3), 146–150. https://doi.org/10.1111/j.0963-7214.2006.00425.x

Movius, H. L., & Allen, J. J. B. (2005). Cardiac vagal tone, defensiveness, and motivational style. *Biological Psychology*, *68*(2), 147–162. https://doi.org/10.1016/j.biopsycho.2004.03.019

Munro, G. D., & Stansbury, J. A. (2009). The dark side of self-affirmation: Confirmation bias and illusory correlation in response to threatening information. *Personality and Social Psychology Bulletin*, *35*(9), 1143–1153. https://doi.org/10.1177/0146167209337163

Murphy, M. C., & Taylor, V. J. (2012). The role of situational cues in signaling and naintaining stereotype threat. In M. Inzlicht & T. Schmader (Eds.), *Stereotype threat: Theory, process, and application* (pp. 17–33). New York, NY: Oxford University Press.

Nelson, E. A., Lickel, J. J., Sy, J. T., Dixon, L. J., & Deacon, B. J. (2010). Probability and cost biases in social phobia: Nature, specificity, and relationship to treatment outcome. *Journal of Cognitive Psychotherapy*, *24*(3), 213–228. https://doi.org/10.1891/0889-8391.24.3.213

Nestadt, G., Romanoski, A. J., Brown, C. H., Chahal, R., Merchant, A., Folstein, M. F., … McHugh, P. R. (1991). DSM-III compulsive personality disorder: An epidemiological survey. *Psychological Medicine*, *21*(2), 461–471. https://doi.org/10.1017/S0033291700020572

Newark, D. A. (2014). Indecision and the construction of self. *Organizational Behavior and Human Decision Processes*, *125*(2), 162–174. https://doi.org/10.1016/j.obhdp.2014.07.005

Newell, B. R., Lagnado, D. A., & Shanks, D. R. (2007). *Straight choices: The psychology of decision making*. Hove, UK: Psychology Press.

Newell, S., & Marabelli, M. (2015). Strategic opportunities (and challenges) of algorithmic decision-making: A call for action on the long-term societal effects of "datification." *Journal of Strategic Information Systems*, *24*(1), 3–14. https://doi.org/10.1016/j.jsis.2015.02.001

Newman, M. G., Llera, S. J., Erickson, T. M., Przeworski, A., & Castonguay, L. G. (2013). Worry and generalized anxiety disorder: A review and theoretical synthesis of evidence on nature, etiology, mechanisms, and treatment. *Annual Review of Clinical Psychology*, *9*(1), 275–297. https://doi.org/10.1146/annurev-clinpsy-050212-185544

Ng, A. H., & Hynie, M. (2014). Cultural differences in indecisiveness: The role of naïve dialecticism. *Personality and Individual Differences*, *70*, 45–50. https://doi.org/10.1016/j.paid.2014.06.022

Ng, A. H., & Hynie, M. (2016). Naïve dialecticism and indecisiveness: Mediating mechanism and downstream consequences. *Journal of Cross-Cultural Psychology*, *47*(2), 263–276. https://doi.org/10.1177/0022022115613861

Nickerson, R. S. (1998). Confirmation bias: A ubiquitous phenomenon in many guises. *Review of General Psychology*, *2*(2), 175–220. https://doi.org/10.1037/1089-2680.2.2.175

Nisbett, R. E., Peng, K., Choi, I., & Norenzayan, A. (2001). Culture and systems of thought: Holistic versus analytic cognition. *Psychological Review*, *108*(2), 291–310. https://doi.org/10.1037/0033-295X.108.2.291

Nisbett, R. E., & Wilson, T. D. (1977). Telling more than we can know: Verbal reports on mental processes. *Psychological Review*, *84*(3), 231–259. https://doi.org/10.1037/0033-295X.84.3.231

Nunan, D., Donovan, G., Jakovljevic, D. G., Hodges, L. D., Sandercock, G. R. H., & Brodie, D. A. (2009). Validity and Reliability of Short-Term Heart-Rate Variability from the Polar S810. *Medicine & Science in Sports & Exercise*, *41*(1), 243–250. https://doi.org/10.1249/MSS.0b013e318184a4b1

Ohira, H., Ichikawa, N., Nomura, M., Isowa, T., Kimura, K., Kanayama, N., … Yamada, J. (2010). Brain and autonomic association accompanying stochastic decision-making. *NeuroImage*, *49*(1), 1024–1037. https://doi.org/10.1016/j.neuroimage.2009.07.060

O'Neil, C. (2016). *Weapons of math destruction: How big data increases inequality and threatens democracy*. New York, NY: Crown.

Orellana-Damacela, L. E., Tindale, S. R., & Suárez-Balcázar, Y. (2000). Decisional and behavioral procrastination: How they relate to self-discrepancies. *Journal of Social Behavior & Personality*, *15*(5), 225–238.

Osipow, S. H. (1999). Assessing career indecision. *Journal of Vocational Behavior*, *55*(1), 147–154. https://doi.org/10.1006/jvbe.1999.1704

Over, D. (2004). Rationality and the normative/descriptive distinction. In D. J. Koehler & N. Harvey (Eds.), *Blackwell handbook of judgment and decision making* (pp. 1–18). Malden, MA: Blackwell.

Pabst, A. (2016). Is liberal democracy sliding into "democratic despotism"? *The Political Quarterly*, *87*(1), 91–95. https://doi.org/10.1111/1467-923X.12209

Pacheco-Unguetti, A. P., Acosta, A., Callejas, A., & Lupiáñez, J. (2010). Attention and anxiety: Different attentional functioning under state and trait anxiety. *Psychological Science*, *21*(2), 298–304. https://doi.org/10.1177/0956797609359624

Pakaluk, M. (2005). *Aristotle's Nicomachean ethics: An introduction*. Cambridge, UK: Cambridge University Press.

Park, G., & Thayer, J. F. (2014). From the heart to the mind: Cardiac vagal tone modulates top-down and bottom-up visual perception and attention to emotional stimuli. *Frontiers in Psychology*, *5*. https://doi.org/10.3389/fpsyg.2014.00278

Park, G., Vasey, M. W., Van Bavel, J. J., & Thayer, J. F. (2014). When tonic cardiac vagal tone predicts changes in phasic vagal tone: The role of fear and perceptual load. *Psychophysiology*, *51*(5), 419–426. https://doi.org/10.1111/psyp.12186

Partnoy, F. (2012). *Wait: The art and science of delay*. New York, NY: PublicAffairs.

Patalano, A. L., Juhasz, B. J., & Dicke, J. (2009). The relationship between indecisiveness and eye movement patterns in a decision making informational search task. *Journal of Behavioral Decision Making*, *23*(4), 353–368. https://doi.org/10.1002/bdm.661

Patalano, A. L., & LeClair, Z. (2011). The influence of group decision making on indecisiveness-related decisional confidence. *Judgment and Decision Making*, *6*(1), 163–175.

Patalano, A. L., & Wengrovitz, S. M. (2006). Cross-cultural exploration of the Indecisiveness Scale: A comparison of Chinese and American men and women. *Personality and Individual Differences*, *41*(5), 813–824. https://doi.org/10.1016/j.paid.2006.03.023

Patalano, A. L., & Wengrovitz, S. M. (2007). Indecisiveness and response to risk in deciding when to decide. *Journal of Behavioral Decision Making*, *20*(4), 405–424. https://doi.org/10.1002/bdm.560

Paulus, M. P. (2007). Decision-making dysfunctions in psychiatry: Altered homeostatic processing? *Science*, *318*(5850), 602–606. https://doi.org/10.1126/science.1142997

Paulus, M. P., & Stein, M. B. (2010). Interoception in anxiety and depression, *214*(5–6), 451–463. https://doi.org/10.1007/s00429-010-0258-9

Pawelski, J. O. (2007). *The dynamic individualism of William James*. Albany, NY: State University of New York Press.

Payne, L. A., Ellard, K. K., Farchione, T. J., Fairholme, C. P., & Barlow, D. H. (2014). Emotional disorders: A unified transdiagnostic protocol. In D. H. Barlow (Ed.), *Clinical handbook of psychological disorders: A step-by-step treatment manual* (5th ed., pp. 237–274). New York, NY: The Guilford Press.

Peng, K., & Nisbett, R. E. (1999). Culture, dialectics, and reasoning about contradiction. *American Psychologist*, *54*(9), 741–754. https://doi.org/10.1037/0003-066X.54.9.741

Perea, M., & Rosa, E. (2002). The effects of associative and semantic priming in the lexical decision task. *Psychological Research*, *66*(3), 180–194. https://doi.org/10.1007/s00426-002-0086-5

Peterson, M. (2009). *An introduction to decision theory*. New York, NY: Cambridge University Press.

Pierro, A., Giacomantonio, M., Pica, G., Kruglanski, A. W., & Higgins, E. T. (2011). On the psychology of time in action: Regulatory mode orientations and procrastination. *Journal of Personality and Social Psychology*, *101*(6), 1317–1331. https://doi.org/10.1037/a0025943

Pieters, R., & Zeelenberg, M. (2005). On bad decisions and deciding badly: When intention–behavior inconsistency is regrettable. *Organizational Behavior and Human Decision Processes*, *97*(1), 18–30. https://doi.org/10.1016/j.obhdp.2005.01.003

Pitz, G. F., & Harren, V. A. (1980). An analysis of career decision making from the point of view of information processing and decision theory. *Journal of Vocational Behavior*, *16*(3), 320–346. https://doi.org/10.1016/0001-8791(80)90059-7

Plath, S. (1963). *The bell jar*. London, UK: Faber & Faber.

Plous, S. (1993). *The psychology of judgment and decision making*. New York, NY: McGraw-Hill.

Polger, T. W. (2012). Functionalism as a philosophical theory of the cognitive sciences. *Wiley Interdisciplinary Reviews: Cognitive Science*, *3*(3), 337–348. https://doi.org/10.1002/wcs.1170

Pollatos, O., & Schandry, R. (2008). Emotional processing and emotional memory are modulated by interoceptive awareness. *Cognition & Emotion*, *22*(2), 272–287. https://doi.org/10.1080/02699930701357535

Potworowski, G. A. (2010). *Varities of indecisive experience: Explaining the tendency to not make timely and stable decisions* (PhD dissertation). University of Michigan.

Prideaux, L.-A., & Creed, P. A. (2001). Career maturity, career decision-making self-efficacy and career indecision: A review of the accrued evidence. *Australian Journal of Career Development*, *10*(3), 7–12. https://doi.org/10.1177/103841620101000303

Pychyl, T. A., & Flett, G. L. (2012). Procrastination and self-regulatory failure: An introduction to the special issue. *Journal of Rational-Emotive & Cognitive-Behavior Therapy*, *30*(4), 203–212. https://doi.org/10.1007/s10942-012-0149-5

Quilty, L. C., & Oakman, J. M. (2004). The assessment of behavioural activation: The relationship between impulsivity and behavioural activation. *Personality and Individual Differences*, *37*(2), 429–442. https://doi.org/10.1016/j.paid.2003.09.014

Rachlin, H. (1989). *Judgment, decision, and choice: A cognitive/behavioral synthesis*. New York, NY: Freeman.

Radespiel-Tröger, M., Rauh, R., Mahlke, C., Gottschalk, T., & Mück-Weymann, M. (2003). Agreement of two different methods for measurement of heart rate variability. *Clinical Autonomic Research*, *13*(2), 99–102. https://doi.org/10.1007/s10286-003-0085-7

Radford, M. H. B., Mann, L., & Kalucy, R. S. (1986). Psychiatric disturbance and decisionmaking. *Australian and New Zealand Journal of Psychiatry*, *20*(2), 210–217. https://doi.org/10.3109/00048678609161333

Rajendra Acharya, U., Paul Joseph, K., Kannathal, N., Lim, C. M., & Suri, J. S. (2006). Heart rate variability: A review. *Medical & Biological Engineering & Computing*, *44*(12), 1031–1051. https://doi.org/10.1007/s11517-006-0119-0

Rakow, T., & Newell, B. R. (2010). Degrees of uncertainty: An overview and framework for future research on experience-based choice. *Journal of Behavioral Decision Making*, *23*(1), 1–14. https://doi.org/10.1002/bdm.681

Ramírez, E., Ortega, A. R., & Reyes Del Paso, G. A. (2015). Anxiety, attention, and decision making: The moderating role of heart rate variability. *International Journal of Psychophysiology*, *98*(3), 490–496. https://doi.org/10.1016/j.ijpsycho.2015.10.007

Rassin, E. (2007). A psychological theory of indecisiveness. *Netherlands Journal of Psychology*, *63*(1), 1–11. https://doi.org/10.1007/BF03061056

Rassin, E., & Muris, P. (2005a). Indecisiveness and the interpretation of ambiguous situations. *Personality and Individual Differences*, *39*(7), 1285–1291. https://doi.org/10.1016/j.paid.2005.06.006

Rassin, E., & Muris, P. (2005b). To be or not to be…indecisive: Gender differences, correlations with obsessive–compulsive complaints, and behavioural manifestation. *Personality and Individual Differences*, *38*(5), 1175–1181. https://doi.org/10.1016/j.paid.2004.07.014

Rassin, E., Muris, P., Booster, E., & Kolsloot, I. (2008). Indecisiveness and informational tunnel vision. *Personality and Individual Differences*, *45*(1), 96–102. https://doi.org/10.1016/j.paid.2008.03.006

Rassin, E., Muris, P., Franken, I., Smit, M., & Wong, M. (2007). Measuring general indecisiveness. *Journal of Psychopathology and Behavioral Assessment*, *29*(1), 60–67. https://doi.org/10.1007/s10862-006-9023-z

Ratcliff, R., Gomez, P., & McKoon, G. (2004). A diffusion model account of the lexical decision task. *Psychological Review*, *111*(1), 159–182. https://doi.org/10.1037/0033-295X.111.1.159

Ratcliff, R., & McKoon, G. (2008). The diffusion decision model: Theory and data for two-choice decision tasks. *Neural Computation*, *20*(4), 873–922. https://doi.org/10.1162/neco.2008.12-06-420

Ratcliff, R., & Smith, P. L. (2004). A comparison of sequential sampling models for two-choice reaction time. *Psychological Review April 2004*, *111*(2), 333–367. https://doi.org/10.1037/0033-295X.111.2.333

Reb, J. (2008). Regret aversion and decision process quality: Effects of regret salience on decision process carefulness. *Organizational Behavior and Human Decision Processes*, *105*(2), 169–182. https://doi.org/10.1016/j.obhdp.2007.08.006

Reb, J., & Connolly, T. (2010). The effects of action, normality, and decision carefulness on anticipated regret: Evidence for a broad mediating role of decision justifiability. *Cognition & Emotion*, *24*(8), 1405–1420. https://doi.org/10.1080/02699930903512168

Reed, G. F. (1976). Indecisiveness in obsessional-compulsive disorder. *British Journal of Social and Clinical Psychology*, *15*(4), 443–445. https://doi.org/10.1111/j.2044-8260.1976.tb00059.x

Reed, G. F. (1983). Obsessional-compulsive disorder: A cognitive/structural approach. *Canadian Psychology/Psychologie Canadienne*, *24*(3), 169–180. https://doi.org/10.1037/h0080729

Reed, G. F. (1985). *Obsessional experience and compulsive behaviour: A cognitive-structural approach*. Toronto, Canada: Academic Press.

Rescher, N. (1960). Choice without preference: A study of the history and of the logic of the problem of "Buridan's ass." *Kant-Studien*, *51*(1–4), 142–175. https://doi.org/10.1515/kant.1960.51.1-4.142

Reynard, A., Gevirtz, R., Berlow, R., Brown, M., & Boutelle, K. (2011). Heart rate variability as a marker of self-regulation. *Applied Psychophysiology and Biofeedback*, *36*(3), 209–215. https://doi.org/10.1007/s10484-011-9162-1

Rice, K. G., Neimeyer, G. J., & Taylor, J. M. (2011). Efficacy of coherence therapy in the treatment of procrastination and perfectionism. *Counseling Outcome Research and Evaluation*, *2*(2), 126–136. https://doi.org/10.1177/2150137811417975

Rilling, J., Kingcasas, B., & Sanfey, A. (2008). The neurobiology of social decision-making. *Current Opinion in Neurobiology*, *18*(2), 159–165. https://doi.org/10.1016/j.conb.2008.06.003

Ring, A. H. (1909). Psychasthenia. *Boston Medical and Surgical Journal*, *161*(6), 185–189. https://doi.org/10.1056/NEJM190908051610604

Rouder, J. N., Lu, J., Speckman, P., Sun, D., & Jiang, Y. (2005). A hierarchical model for estimating response time distributions. *Psychonomic Bulletin & Review*, *12*(2), 195–223.

Rowa, K., Antony, M. M., & Swinson, R. P. (2007). Exposure and response prevention. In C. Purdon, M. M. Antony & L. J. Summerfeldt (Eds.), *Psychological treatment of obsessive-compulsive disorder: Fundamentals and beyond* (pp. 79–109). Washington, DC: American Psychological Association.

Rubenstein, M.-J. (2008). *Strange wonder: The closure of metaphysics and the opening of awe*. New York, NY: Columbia University Press.

Rubin, D. C., Schrauf, R. W., & Greenberg, D. L. (2003). Belief and recollection of autobiographical memories. *Memory & Cognition*, *31*(6), 887–901. https://doi.org/10.3758/BF03196443

Sachdev, P. S., & Malhi, G. S. (2005). Obsessive–compulsive behaviour: A disorder of decision-making. *Australian and New Zealand Journal of Psychiatry*, *39*(9), 757–763. https://doi.org/10.1080/j.1440-1614.2005.01680.x

Saka, N., & Gati, I. (2007). Emotional and personality-related aspects of persistent career decision-making difficulties. *Journal of Vocational Behavior*, *71*(3), 340–358. https://doi.org/10.1016/j.jvb.2007.08.003

Saka, N., Gati, I., & Kelly, K. R. (2008). Emotional and personality-related aspects of career-decision-making difficulties. *Journal of Career Assessment*, *16*(4), 403–424. https://doi.org/10.1177/1069072708318900

Salahuddin, L., Cho, J., Jeong, M. G., & Kim, D. (2007). Ultra short term analysis of heart rate variability for monitoring mental stress in mobile settings. In *29th Annual International Conference of the IEEE Engineering in Medicine and Biology Society, 2007* (pp. 4656–4659). IEEE. https://doi.org/10.1109/IEMBS.2007.4353378

Salecl, R. (2009). Society of choice. *Differences*, *20*(1), 157–180. https://doi.org/10.1215/10407391-2008-020

Salecl, R. (2011). *The tyranny of choice*. London, UK: Profile Books.

Samuelson, W., & Zeckhauser, R. (1988). Status quo bias in decision making. *Journal of Risk and Uncertainty*, *1*(1), 7–59. https://doi.org/10.1007/BF00055564

Sánchez-Meca, J., López-Pina, J., López-López, J. A., Marín-Martínez, F., Rosa-Alcázar, A. I., & Gómez-Conesa, A. (2011). The Maudsley Obsessive-Compulsive Inventory: A reliability generalization meta-analysis. *International Journal of Clinical and Health Psychology*, *11*(3), 473–493.

Santos, P. J. (2001). Predictors of generalized indecision among Portuguese secondary school students. *Journal of Career Assessment*, *9*(4), 381–396. https://doi.org/10.1177/106907270100900405

Sarig, S., Dar, R., & Liberman, N. (2012). Obsessive-compulsive tendencies are related to indecisiveness and reliance on feedback in a neutral color judgment task. *Journal of Behavior Therapy and Experimental Psychiatry*, *43*(1), 692–697. https://doi.org/10.1016/j.jbtep.2011.09.012

Sartre, J.-P., & Elkaïm-Sartre, A. (2007). *Existentialism is a humanism*. (J. Kulka, Ed.). New Haven, CT: Yale University Press (Original work published 1946).

Savage, L. J. (1954). *The foundations of statistics*. New York, NY: Wiley.

Savani, K., Markus, H. R., Naidu, N. V. R., Kumar, S., & Berlia, N. (2010). What counts as a choice? U.S. Americans are more likely than Indians to construe actions as choices. *Psychological Science*, *21*(3), 391–398. https://doi.org/10.1177/0956797609359908

Savickas, M. L., & Spielberger, C. (2004). Vocational psychology. In *Encyclopedia of applied psychology* (pp. 655–667). Amsterdam, the Netherlands: Elsevier.

Scheibehenne, B., Greifeneder, R., & Todd, P. M. (2010). Can there ever be too many options? A meta-analytic review of choice overload. *Journal of Consumer Research*, *37*(3), 409–425. https://doi.org/10.1086/651235

Scherer, A. M., Taber-Thomas, B. C., & Tranel, D. (2015). A neuropsychological investigation of decisional certainty. *Neuropsychologia*, *70*, 206–213. https://doi.org/10.1016/j.neuropsychologia.2015.02.036

Scherer, K. R. (2009). The dynamic architecture of emotion: Evidence for the component process model. *Cognition & Emotion*, *23*(7), 1307–1351. https://doi.org/10.1080/02699930902928969

Schlösser, T., Dunning, D., & Fetchenhauer, D. (2013). What a feeling: The role of immediate and anticipated emotions in risky decisions. *Journal of Behavioral Decision Making*, *26*(1), 13–30. https://doi.org/10.1002/bdm.757

Schmader, T., & Beilock, S. (2012). An integration of processes that underlie stereotype threat. In M. Inzlicht & T. Schmader (Eds.), *Stereotype threat: Theory, process, and application* (pp. 34–50). New York, NY: Oxford University Press.

Schmeichel, B. J., & Baumeister, R. F. (2004). Self-regulatory strength. In R. F. Baumeister & K. D. Vohs (Eds.), *Handbook of self-regulation: Research, theory, and applications* (pp. 84–98). New York, NY: Guilford Press.

Schmidt, N. B., Richey, J. A., Zvolensky, M. J., & Maner, J. K. (2008). Exploring human freeze responses to a threat stressor. *Journal of Behavior Therapy and Experimental Psychiatry*, *39*(3), 292–304. https://doi.org/10.1016/j.jbtep.2007.08.002

Schön, D. A. (1983). *The reflective practitioner: How professionals think in action*. New York, NY: Basic Books.

Schulte-Mecklenbeck, M., Kühberger, A., & Ranyard, R. (Eds.). (2011). *A handbook of process tracing methods for decision research: A critical review and user's guide*. New York, NY: Psychology Press.

Schwartz, B. (2004). *The paradox of choice: Why more is less*. New York, NY: Ecco.

Schwartz, B. (2010). The Limits of Cost-Benefit Calculation: Commentary on Bennis, Medin, & Bartels (2010). *Perspectives on Psychological Science*, *5*(2), 203–205. https://doi.org/10.1177/1745691610362355

Schwarz, N., & Clore, G. L. (1983). Mood, misattribution, and judgments of well-being: Informative and directive functions of affective states. *Journal of Personality and Social Psychology*, *45*(3), 513–523. https://doi.org/10.1037/0022-3514.45.3.513

Segerstrom, S. C., & Nes, L. S. (2007). Heart rate variability reflects self-regulatory strength, effort, and fatigue. *Psychological Science*, *18*(3), 275–281. https://doi.org/10.1111/j.1467-9280.2007.01888.x

Shafir, E. (1993). Reason-based choice. *Cognition*, *49*(1–2), 11–36. https://doi.org/10.1016/0010-0277(93)90034-S

Shafir, E., & LeBoeuf, R. A. (2002). Rationality. *Annual Review of Psychology*, *53*(1), 491–517. https://doi.org/10.1146/annurev.psych.53.100901.135213

Sherman, N. (1985). Character, planning, and choice in Aristotle. *The Review of Metaphysics*, *39*(1), 83–106.

Shiloh, S., & Melamed, S. (1988). Anxiety, conflict, and perception of everyday decisions. *Psychological Reports*, *62*(3), 799–805. https://doi.org/10.2466/pr0.1988.62.3.799

Silvia, P. J. (2006). *Exploring the psychology of interest*. Oxford, UK: Oxford University Press.

Simon, H. A. (1955). A behavioral model of rational choice. *The Quarterly Journal of Economics*, *69*(1), 99–118. https://doi.org/10.2307/1884852

Simon, H. A. (1976). From substantive to procedural rationality. In T. J. Kastelein, S. K. Kuipers, W. A. Nijenhuis, & G. R. Wagenaar (Eds.), *25 years of economic theory* (pp. 65–86). Boston, MA: Springer.

Simon, H. A. (1982). *Models of bounded rationality*. Cambridge, MA: MIT Press.

Simon, H. A. (1986). Rationality in psychology and economics. *Journal of Business*, *59*(4), S209–S224.

Simon, H. A. (2000). Bounded rationality in social science: Today and tomorrow. *Mind & Society*, *1*(1), 25–39. https://doi.org/10.1007/BF02512227

Sirois, F., & Pychyl, T. (2013). Procrastination and the priority of short-term mood regulation: Consequences for future self. *Social and Personality Psychology Compass*, *7*(2), 115–127. https://doi.org/10.1111/spc3.12011

Smith, T. W., Cribbet, M. R., Nealey-Moore, J. B., Uchino, B. N., Williams, P. G., MacKenzie, J., & Thayer, J. F. (2011). Matters of the variable heart: Respiratory sinus arrhythmia response to marital interaction and associations with marital quality. *Journal of Personality and Social Psychology*, *100*(1), 103–119. https://doi.org/10.1037/a0021136

Smithson, M. (1989). A Vocabulary of Ignorance. In M. Smithson, *Ignorance and uncertainty: Emerging paradigms* (pp. 1–13). New York, NY: Springer.

Smithson, M. (2008). The many faces and masks of uncertainty. In G. Bammer & M. Smithson (Eds.), *Uncertainty and risk: Multidisciplinary perspectives* (pp. 13–25). London, UK: Earthscan.

Smithson, M., & Shou, Y. (2014). Randomly stopped sums: Models and psychological applications. *Frontiers in Psychology*, *5*. https://doi.org/10.3389/fpsyg.2014.01279

Snyder, M. (1974). Self-monitoring of expressive behavior. *Journal of Personality and Social Psychology*, *30*(4), 526–537. https://doi.org/10.1037/h0037039

Snyder, M. (1987). *Public appearances, private realities: The psychology of self-monitoring*. New York, NY: Freeman.

Snyder, M., & Cantor, N. (1998). Understanding personality and social behavior: A functionalist strategy. In D. T. Gilbert, S. T. Fiske, & L. Gardner (Eds.), *The*

handbook of social psychology (4th ed., Vol. Vols. 1-2, pp. 635–679). New York, NY: McGraw-Hill.

Sparks, E. A., Ehrlinger, J., & Eibach, R. P. (2012). Failing to commit: Maximizers avoid commitment in a way that contributes to reduced satisfaction. *Personality and Individual Differences*, *52*(1), 72–77. https://doi.org/10.1016/j.paid.2011.09.002

Speechley, W. J., Whitman, J. C., & Woodward, T. S. (2010). The contribution of hypersalience to the "jumping to conclusions" bias associated with delusions in schizophrenia. *Journal of Psychiatry and Neuroscience*, *35*(1), 7–17. https://doi.org/10.1503/jpn.090025

Spencer, S. J., Logel, C., & Davies, P. G. (2016). Stereotype threat. *Annual Review of Psychology*, *67*(1), 415–437. https://doi.org/10.1146/annurev-psych-073115-103235

Spencer-Rodgers, J. (2004). Dialectical self-esteem and East-West differences in psychological well-being. *Personality and Social Psychology Bulletin*, *30*(11), 1416–1432. https://doi.org/10.1177/0146167204264243

Spencer-Rodgers, J., Boucher, H. C., Mori, S. C., Wang, L., & Peng, K. (2009). The dialectical self-concept: Contradiction, change, and holism in East Asian cultures. *Personality and Social Psychology Bulletin*, *35*(1), 29–44. https://doi.org/10.1177/0146167208325772

Spielberger, C. D. (1966). Theory and research on anxiety. In C. D. Spielberger (Ed.), *Anxiety and behavior* (pp. 3–20). New York, NY: Academic Press.

Spielberger, C. D. (1983). *Manual for the State-Trait Anxiety Inventory: STAI (Form Y)*. Palo Alto, CA: Consulting Psychologists Press.

Spielberger, C. D., & Sydeman, S. J. (1994). State-Trait Anxiety Inventory and State-Trait Anger Expression Inventory. In *The use of psychological testing for treatment planning and outcome assessment* (pp. 292–321). Hillsdale, NJ: Lawrence Erlbaum Associates, Inc.

Spunt, R. P., Rassin, E., & Epstein, L. M. (2009). Aversive and avoidant indecisiveness: Roles for regret proneness, maximization, and BIS/BAS sensitivities. *Personality and Individual Differences*, *47*(4), 256–261. https://doi.org/10.1016/j.paid.2009.03.009

Stainton, M., Lay, C. H., & Flett, G. L. (2000). Trait procrastinators and behavior/trait-specific cognitions. *Journal of Social Behavior & Personality*, *15*(5), 297–312.

Steel, P. (2007). The nature of procrastination: A meta-analytic and theoretical review of quintessential self-regulatory failure. *Psychological Bulletin*, *133*(1), 65–94. https://doi.org/10.1037/0033-2909.133.1.65

Steel, P. (2011). *The procrastination equation: How to stop putting things off and start getting stuff done*. New York, NY: Harper.

Steele, C. M., Spencer, S. J., & Aronson, J. (2002). Contending with group image: The psychology of stereotype and social identity threat. *Advances in Experimental Social Psychology*, *34*, 379–440.

Steinhauser, M., & Hübner, R. (2009). Distinguishing response conflict and task conflict in the Stroop task: Evidence from ex-Gaussian distribution analysis. *Journal of Experimental Psychology: Human Perception and Performance*, *35*(5), 1398–1412. https://doi.org/10.1037/a0016467

Stieger, S., & Reips, U.-D. (2010). What are participants doing while filling in an online questionnaire: A paradata collection tool and an empirical study. *Computers in Human Behavior*, *26*(6), 1488–1495. https://doi.org/10.1016/j.chb.2010.05.013

Sunstein, C. R. (2015). *Choosing not to choose: Understanding the value of choice*. New York, NY: Oxford University Press.

Swami, V., Sinniah, D., Subramaniam, P., Pillai, S. K., Kannan, K., & Chamorro-Premuzic, T. (2008). An exploration of the Indecisiveness Scale in multiethnic Malaysia. *Journal of Cross-Cultural Psychology*, *39*(3), 309–316. https://doi.org/10.1177/0022022108315544

Tabachnick, B. G., & Fidell, L. S. (2013). *Using multivariate statistics* (6th ed.). Boston, MA: Pearson.

Taber, B. J. (2013). Time perspective and career decision-making difficulties in adults. *Journal of Career Assessment*, *21*(2), 200–209. https://doi.org/10.1177/1069072712466722

Tajfel, H., Billig, M. G., Bundy, R. P., & Flament, C. (1971). Social categorization and intergroup behaviour. *European Journal of Social Psychology*, *1*(2), 149–178. https://doi.org/10.1002/ejsp.2420010202

Talarico, J. M., LaBar, K. S., & Rubin, D. C. (2004). Emotional intensity predicts autobiographical memory experience. *Memory & Cognition*, *32*(7), 1118–1132. https://doi.org/10.3758/BF03196886

Tang, S. (2006). *What's new? Interest in confirmatory and disconfirmatory information* (BPsych (Hons) thesis). Australian National University, Canberra.

Tangney, J. P., & Tracy, J. L. (2011). Self-conscious emotions. In M. R. Leary & J. P. Tangney (Eds.), *Handbook of self and identity* (2nd ed., pp. 446–478). New York, NY: Guilford Press.

Tarvainen, M. P., Niskanen, J.-P., Lipponen, J. A., Ranta-aho, P. O., & Karjalainen, P. A. (2014). Kubios HRV: Heart rate variability analysis software. *Computer Methods and Programs in Biomedicine*, *113*(1), 210–220. https://doi.org/10.1016/j.cmpb.2013.07.024

Task Force of the European Society of Cardiology the North American Society of Pacing Electrophysiology. (1996). Heart rate variability: Standards of measurement, physiological interpretation, and clinical use. *Circulation*, *93*(5), 1043–1065. https://doi.org/10.1161/01.CIR.93.5.1043

Teichert, T., Ferrera, V. P., & Grinband, J. (2014). Humans optimize decision-making by delaying decision onset. *PLoS ONE*, *9*(3), e89638. https://doi.org/10.1371/journal.pone.0089638

Tetlock, P. E. (2002). Social functionalist frameworks for judgment and choice: Intuitive politicians, theologians, and prosecutors. *Psychological Review*, *109*(3), 451–471. https://doi.org/10.1037//0033-295X.109.3.451

Thaler, R. H., & Sunstein, C. R. (2009). *Nudge: Improving decisions about health, wealth, and happiness* (Rev. ed.). New York, NY: Penguin Books.

Thayer, J. F., Hansen, A. L., Saus-Rose, E., & Johnsen, B. H. (2009). Heart rate variability, prefrontal neural function, and cognitive performance: The neurovisceral integration perspective on self-regulation, adaptation, and health. *Annals of Behavioral Medicine*, *37*(2), 141–153. https://doi.org/10.1007/s12160-009-9101-z

The Voice of Experience, Inc. (1934). *The voice of experience*. New York, NY: Dodd, Mead.

Thomas Aquinas, St. (1920). *Summa Theologicae*. Retrieved from http://www.newadvent.org/summa/ (Original work published 1485).

Thompson, E. R. (2007). Development and validation of an internationally reliable short-form of the Positive and Negative Affect Schedule (PANAS). *Journal of Cross-Cultural Psychology*, *38*(2), 227–242. https://doi.org/10.1177/0022022106297301

Thompson, M. M., Naccarato, M. E., Parker, K. C. H., & Moskowitz, G. B. (2001). The Personal Need for Structure and Personal Fear of Invalidity measures: Historical perspectives, current applications, and future directions. In G. B. Moskowitz (Ed.),

Cognitive social psychology: The Princeton Symposium on the legacy and future of social cognition (pp. 19–39). Mahwah, NJ: Erlbaum.

Thought Technology Ltd. (2011). Biograph Infiniti (Version 5.1). Montreal West, Canada.

Tibbett, T. P., & Ferrari, J. R. (2015). The portrait of the procrastinator: Risk factors and results of an indecisive personality. *Personality and Individual Differences*, *82*, 175–184. https://doi.org/10.1016/j.paid.2015.03.014

Tice, D. M., & Bratslavsky, E. (2000). Giving in to feel good: The place of emotion regulation in the context of general self-control. *Psychological Inquiry*, *11*(3), 149–159. https://doi.org/10.1207/S15327965PLI1103_03

Tien, H.-L. S. (2005). The validation of the Career Decision-Making Difficulties Scale in a Chinese culture. *Journal of Career Assessment*, *13*(1), 114–127. https://doi.org/10.1177/1069072704270327

Toplak, M. E., Sorge, G. B., Benoit, A., West, R. F., & Stanovich, K. E. (2010). Decision-making and cognitive abilities: A review of associations between Iowa Gambling Task performance, executive functions, and intelligence. *Clinical Psychology Review*, *30*(5), 562–581. https://doi.org/10.1016/j.cpr.2010.04.002

Tracy, J. L., & Robins, R. W. (2004). Putting the self into self-conscious emotions: A theoretical model. *Psychological Inquiry*, *15*(2), 103–125. https://doi.org/10.1207/s15327965pli1502_01

Trevizani, G. A., Peçanha, T., Nasario-Junior, O., Vianna, J. M., Silva, L. P., & Nadal, J. (2015). Cardiac autonomic responses after resistance exercise in treated hypertensive subjects. *Frontiers in Physiology*, *6*. https://doi.org/10.3389/fphys.2015.00258

Trope, Y., & Liberman, N. (2003). Temporal construal. *Psychological Review*, *110*(3), 403–421. https://doi.org/10.1037/0033-295X.110.3.403

Tsakiris, M., Jimenez, A. T.-, & Costantini, M. (2011). Just a heartbeat away from one's body: Interoceptive sensitivity predicts malleability of body-representations. *Proceedings of the Royal Society B: Biological Sciences*, *278*(1717), 2470–2476. https://doi.org/10.1098/rspb.2010.2547

Turner, J. C., Oakes, P. J., Haslam, S. A., & McGarty, C. (1994). Self and collective: Cognition and social context. *Personality and Social Psychology Bulletin*, *20*(5), 454–463. https://doi.org/10.1177/0146167294205002

Tversky, A., & Shafir, E. (1992). Choice under conflict: The dynamics of deferred decision. *Psychological Science*, *3*(6), 358–361. https://doi.org/10.1111/j.1467-9280.1992.tb00047.x

Tykocinski, O. E., & Ruffle, B. J. (2003). Reasonable reasons for waiting. *Journal of Behavioral Decision Making*, *16*(2), 147–157. https://doi.org/10.1002/bdm.439

Tyler, J. M., & Burns, K. C. (2008). After depletion: The replenishment of the self's regulatory resources. *Self and Identity*, *7*(3), 305–321. https://doi.org/10.1080/15298860701799997

Tyler, L. E. (1969). *The work of the counselor* (3rd ed.). New York, NY: Appleton-CEntury-Crofts.

University of Kuopio. (2012). Kubios HRV (Version 2.0). Kuopio, Finland.

Upper, D. (1974). The unsuccessful self-treatment of a case of "writer's block." *Journal of Applied Behavior Analysis*, *7*(3), 497–497. https://doi.org/10.1901/jaba.1974.7-497a

Uzun Ozer, B., Demir, A., & Ferrari, J. R. (2013). Reducing academic procrastination through a group treatment program: A pilot study. *Journal of Rational-Emotive & Cognitive-Behavior Therapy*, *31*(3), 127–135. https://doi.org/10.1007/s10942-013-0165-0

Van Harreveld, F., Rutjens, B., Rotteveel, M., Nordgren, L., & Vanderpligt, J. (2009). Ambivalence and decisional conflict as a cause of psychological discomfort: Feeling tense before jumping off the fence. *Journal of Experimental Social Psychology*, *45*(1), 167–173. https://doi.org/10.1016/j.jesp.2008.08.015

van Randenborgh, A., de Jong-Meyer, R., & Hüffmeier, J. (2010a). Decision making in depression: Differences in decisional conflict between healthy and depressed individuals. *Clinical Psychology & Psychotherapy*, *17*(4), 285–298. https://doi.org/10.1002/cpp.651

van Randenborgh, A., de Jong-Meyer, R., & Hüffmeier, J. (2010b). Rumination fosters indecision in dysphoria. *Journal of Clinical Psychology*, *66*(3), 229–248. https://doi.org/10.1002/jclp.20647

Vohs, K. D., Baumeister, R. F., & Ciarocco, N. J. (2005). Self-regulation and self-presentation: Regulatory resource depletion impairs impression management and effortful self-presentation depletes regulatory resources. *Journal of Personality and Social Psychology*, *88*(4), 632–657. https://doi.org/10.1037/0022-3514.88.4.632

Vohs, K. D., Baumeister, R. F., Schmeichel, B. J., Twenge, J. M., Nelson, N. M., & Tice, D. M. (2008). Making choices impairs subsequent self-control: a limited-resource account of decision making, self-regulation, and active initiative. *Journal of Personality and Social Psychology*, *94*(5), 883–898. https://doi.org/10.1037/0022-3514.94.5.883

Vohs, K. D., & Heatherton, T. F. (2000). Self-regulatory failure: A resource-depletion approach. *Psychological Science*, *11*(3), 249–254. https://doi.org/10.1111/1467-9280.00250

Wagenmakers, E.-J., Ratcliff, R., Gomez, P., & McKoon, G. (2008). A diffusion model account of criterion shifts in the lexical decision task. *Journal of Memory and Language*, *58*(1), 140–159. https://doi.org/10.1016/j.jml.2007.04.006

Waldfogel, J. (1993). The deadweight loss of Christmas. *American Economic Review*, *83*(5), 1328–1336.

Walker, J. V., & Peterson, G. W. (2012). Career thoughts, indecision, and depression: Implications for mental health assessment in career counseling. *Journal of Career Assessment*, *20*(4), 497–506. https://doi.org/10.1177/1069072712450010

Walker, L. J. S. (2004). Overcoming the patterns of powerlessness that lead to procrastination. In H. C. Schouwenburg, C. H. Lay, T. A. Pychyl, & J. R. Ferrari (Eds.), *Counseling the procrastinator in academic settings* (pp. 75–89). Washington, DC: American Psychological Association.

Wallis, S. E. (2010). Towards a science of metatheory. *Integral Review*, *6*(3), 73–120.

Walton, G. L. (1908). *Why worry?* Philadephia, PA: Lippincott.

Wansink, B., & Sobal, J. (2007). Mindless eating: The 200 daily food decisions we overlook. *Environment and Behavior*, *39*(1), 106–123. https://doi.org/10.1177/0013916506295573

Ward, A., Lyubomirsky, S., Sousa, L., & Nolen-Hoeksema, S. (2003). Can't quite commit: Rumination and uncertainty. *Personality and Social Psychology Bulletin*, *29*(1), 96–107. https://doi.org/10.1177/0146167202238375

Watkins, E. (2015). An alternative transdiagnostic mechanistic approach to affective disorders illustrated with research from clinical psychology. *Emotion Review*, *7*(3), 250–255. https://doi.org/10.1177/1754073915575400

Watkins, E. R. (2008). Constructive and unconstructive repetitive thought. *Psychological Bulletin*, *134*(2), 163–206. https://doi.org/10.1037/0033-2909.134.2.163

Watson, D., & Clark, L. A. (1994). The PANAS-X: Manual for the Positive and Negative Affect Schedule, Expanded Form. University of Iowa.

Weber, E. U., & Johnson, E. J. (2009). Mindful Judgment and Decision Making. *Annual Review of Psychology*, *60*(1), 53–85. https://doi.org/10.1146/annurev.psych.60.110707.163633

Welsh, D. T., & Ordóñez, L. D. (2014). Conscience without cognition: The effects of subconscious priming on ethical behavior. *Academy of Management Journal*, *57*(3), 723–742. https://doi.org/10.5465/amj.2011.1009

White, L. O., & Mansell, W. (2009). Failing to ponder? Delusion-prone individuals rush to conclusions. *Clinical Psychology & Psychotherapy*, *16*(2), 111–124. https://doi.org/10.1002/cpp.607

Wiens, S., Mezzacappa, E. S., & Katkin, E. S. (2000). Heartbeat detection and the experience of emotions. *Cognition & Emotion*, *14*(3), 417–427. https://doi.org/10.1080/026999300378905

Wilamowska, Z. A., Thompson-Hollands, J., Fairholme, C. P., Ellard, K. K., Farchione, T. J., & Barlow, D. H. (2010). Conceptual background, development, and preliminary data from the unified protocol for transdiagnostic treatment of emotional disorders. *Depression and Anxiety*, *27*(10), 882–890. https://doi.org/10.1002/da.20735

Williams, D. P., Jarczok, M. N., Ellis, R. J., Hillecke, T. K., Thayer, J. F., & Koenig, J. (2016). Two-week test-retest reliability of the Polar RS800CX to record heart rate variability. *Clinical Physiology and Functional Imaging*. Advance online publication. https://doi.org/10.1111/cpf.12321

Williams, M. J., & Broadbent, K. (1986). Autobiographical memory in suicide attempters. *Journal of Abnormal Psychology*, *95*(2), 144–149. https://doi.org/10.1037/0021-843X.95.2.144

Wilmot, M. P., DeYoung, C. G., Stillwell, D., & Kosinski, M. (2016). Self-monitoring and the metatraits. *Journal of Personality*, *84*(3), 335–347. https://doi.org/10.1111/jopy.12162

Wilson, T. D., Centerbar, D. B., Kermer, D. A., & Gilbert, D. T. (2005). The pleasures of uncertainty: Prolonging positive moods in ways people do not anticipate. *Journal of Personality and Social Psychology*, *88*(1), 5–21. https://doi.org/10.1037/0022-3514.88.1.5

Winfield, A. F. T., Blum, C., & Liu, W. (2014). Towards an ethical robot: Internal models, consequences and ethical action selection. In M. Mistry, A. Leonardis, M.

Witkowski, & C. Melhuish (Eds.), *Advances in Autonomous Robotics Systems* (Vol. 8717, pp. 85–96). Cham, Switzerland: Springer International Publishing.

Winkielman, P., Schwarz, N., Fazendeiro, T. A., & Reber, R. (2003). The hedonic marking of processing fluency: Implications for evaluative judgment. In J. Musch & K. C. Klauer (Eds.), *The psychology of evaluation: Affective processes in cognition and emotion* (pp. 195–223). Mahwah, NJ: Erlbaum.

Wolfe, J. B., & Betz, N. E. (2004). The relationship of attachment variables to career decision-making self-efficacy and fear of commitment. *Career Development Quarterly*, *52*(4), 363–369. https://doi.org/10.1002/j.2161-0045.2004.tb00952.x

Wolfe, R. N., Lennox, R. D., & Cutler, B. L. (1986). Getting along and getting ahead: Empirical support for a theory of protective and acquisitive self-presentation. *Journal of Personality and Social Psychology*, *50*(2), 356–361. https://doi.org/10.1037/0022-3514.50.2.356

Yalom, I. D. (1989). *Love's executioner, and other tales of psychotherapy*. New York, NY: HarperPerennial.

Yates, J. F., Ji, L.-J., Oka, T., Lee, J.-W., Shinotsuka, H., & Sieck, W. R. (2010). Indecisiveness and culture: Incidence, values, and thoroughness. *Journal of Cross-Cultural Psychology*, *41*(3), 428–444. https://doi.org/10.1177/0022022109359692

Yates, J. F., Veinott, E. S., & Patalano, A. L. (2003). Hard decisions, bad decisions: On decision quality and decision aiding. In S. L. Schneider & J. Shanteau (Eds.), *Emerging perspectives on judgment and decision research* (pp. 1–63). New York, NY: Cambridge University Press.

Yeung, N., & Summerfield, C. (2012). Metacognition in human decision-making: Confidence and error monitoring. *Philosophical Transactions of the Royal Society B: Biological Sciences*, *367*(1594), 1310–1321. https://doi.org/10.1098/rstb.2011.0416

Young, J., Klosko, J., & Weishaar, M. E. (2003). *Schema therapy: A practitioner's guide*. New York, NY: Guilford Press.

Zakay, D. (1993). The impact of time perception processes on decision making under time stress. In O. Svenson & A. J. Maule (Eds.), *Time pressure and stress in human judgment and decision making* (pp. 59–72). Boston, MA: Springer.

Zeleny, M. (1982). *Multiple criteria decision making*. New York, NY: McGraw-Hill.

Zimbardo, P. (2008, August 3). Time perspective biases: General, phenomenological characterizations of each time perspective. Retrieved from

http://www.thetimeparadox.com/2008/08/03/an-overview-of-time-perspective-types/

Zimbardo, P. G., & Boyd, J. (2008). *The time paradox*. London, UK: Rider.

Zimbardo, P. G., & Boyd, J. N. (1999). Putting time in perspective: A valid, reliable individual-differences metric. *Journal of Personality and Social Psychology*, *77*(6), 1271–1288. https://doi.org/10.1037/0022-3514.77.6.1271

Zwaan, R. (2013, September 17). How to cook up your own social priming article. Retrieved from http://rolfzwaan.blogspot.com.au/2013/09/how-to-cook-up-your-own-social-priming.html

APPENDICES

Appendix 4.1: ANU Human Research Ethics Committee Variation and Approval

Study 1 Pilot Variation Approval

Variation - Human Ethics Protocol 2009/561
1 message

aries@anu.edu.au <aries@anu.edu.au> Wed, Jun 2, 2010 at 8:00 AM
To: Stephen.tang@anu.edu.au
Cc: michael.smithson@anu.edu.au, human.ethics.officer@anu.edu.au

THIS IS A SYSTEM-GENERATED E-MAIL. PLEASE DO NOT REPLY. SEE BELOW FOR CONTACT DETAILS

Dear Mr Stephen Tang,

Protocol: 2009/561
Indecision: An exploration of information evaluation and expectancy-based processes

I am pleased to advise the Chair of the Human Research Ethics Committee has approved the variation you submitted on 31/05/2010 requesting:

"This is a supplementary variation to this protocol. Please see the attachments for: (i) a explanation for the variation, (ii) survey questions, (iii) recruitment poster and (iv) supervisor's letter of support.

1. On completion of the survey, participants will be issued a unique receipt number (in the form of something like 12-345678-9012). They will be asked to print this page or write down the number when obtaining payment/course credit. I will then cross off the receipt number from the list. The receipt numbers are kept separate from the raw data and cannot be linked back to individual participant responses.

2. Attached is an updated information sheet removing the reference to the requirement of reasonable effort for payment/credit."

You may now commence your research as per your modified protocol.

All the best with your research,

Kim

Ms Kim Tiffen
Human Ethics Manager/rDNA Secretary
Office of Research Integrity,
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http://anu.edu.au/ro/ORI/Human/human_index.php

Study 1 Approval

Human Ethics Protocol 2012/155

aries@anu.edu.au <aries@anu.edu.au> Fri, Mar 30, 2012 at 8:55 AM
To: Stephen.tang@anu.edu.au
Cc: michael.smithson@anu.edu.au, human.ethics.officer@anu.edu.au

THIS IS A SYSTEM-GENERATED E-MAIL. PLEASE DO NOT REPLY. SEE BELOW FOR E-MAIL CONTACT DETAILS.

Dear Mr Stephen Tang,

Protocol: 2012/155
The subjective experience, cognitive appraisal and affective structure of indecision

I am pleased to advise you that your Human Ethics protocol received approval by the Chair of the Science and Medical DERC on 29 March 2012.

PLEASE NOTE: You will need to include contact details for Lifeline and the ANU counselling services on your Information sheet.

For your information:

1. Under the NHMRC/AVCC National Statement on Ethical Conduct in Human Research we are required to follow up research that we have approved. Once a year (or sooner for short projects) we shall request a brief report on any ethical issues which may have arisen during your research or whether it proceeded according to the plan outlined in the above protocol.

2. Please notify the committee of any changes to your protocol in the course of your research, and when you complete or cease working on the project.

3. Please notify the Committee immediately if any unforeseen events occur that might affect continued ethical acceptability of the research work.

4. Please advise the HREC if you receive any complaints about the research work.

5. The validity of the current approval is five years' maximum from the date shown approved. For longer projects you are required to seek renewed approval from the Committee.

All the best with your research,

Kim

Ms Kim Tiffen
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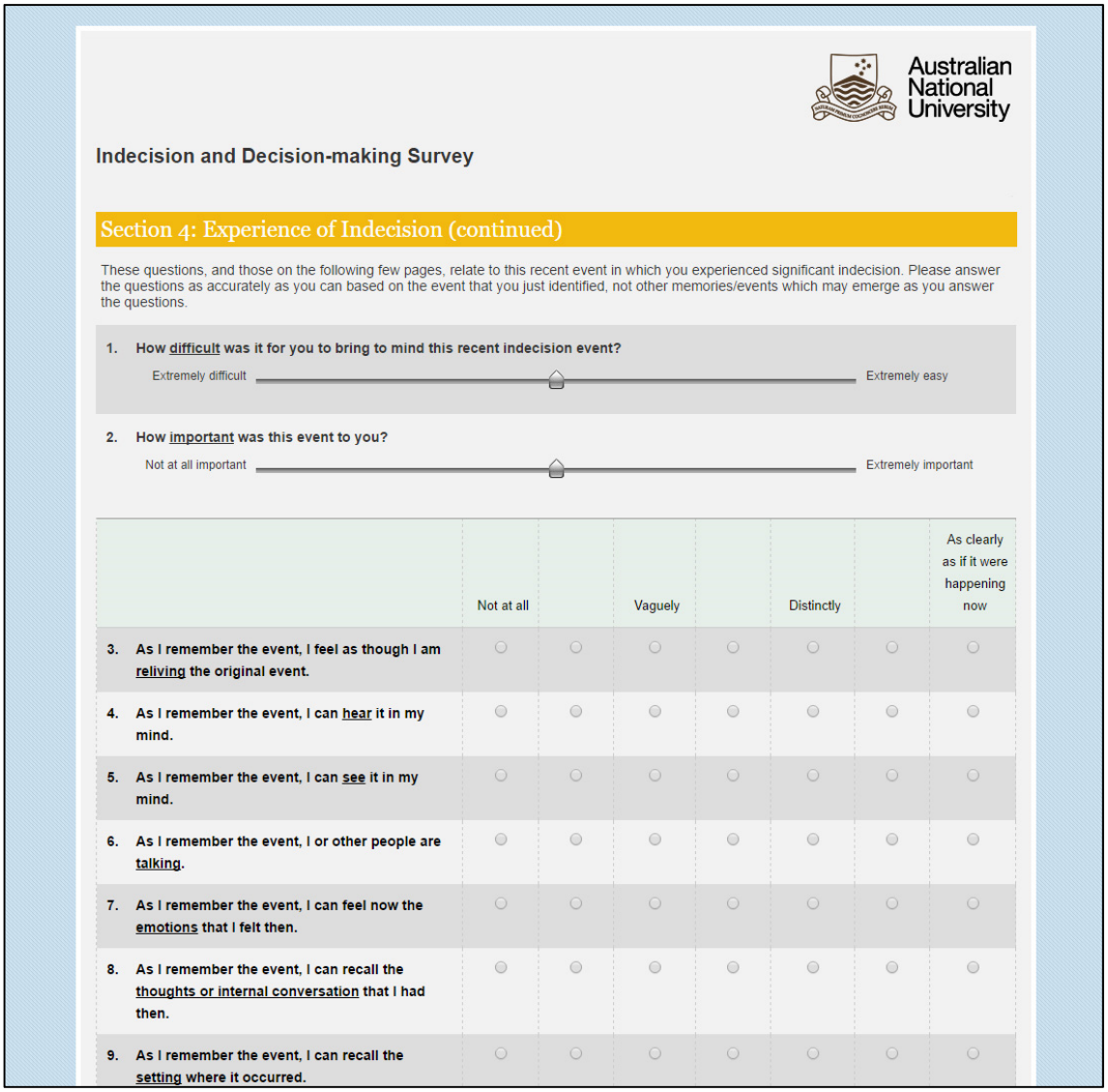
Appendix 4.2: Screenshots from Online Survey



Australian National University

Indecision and Decision-making Survey

Section 4: Experience of Indecision (continued)

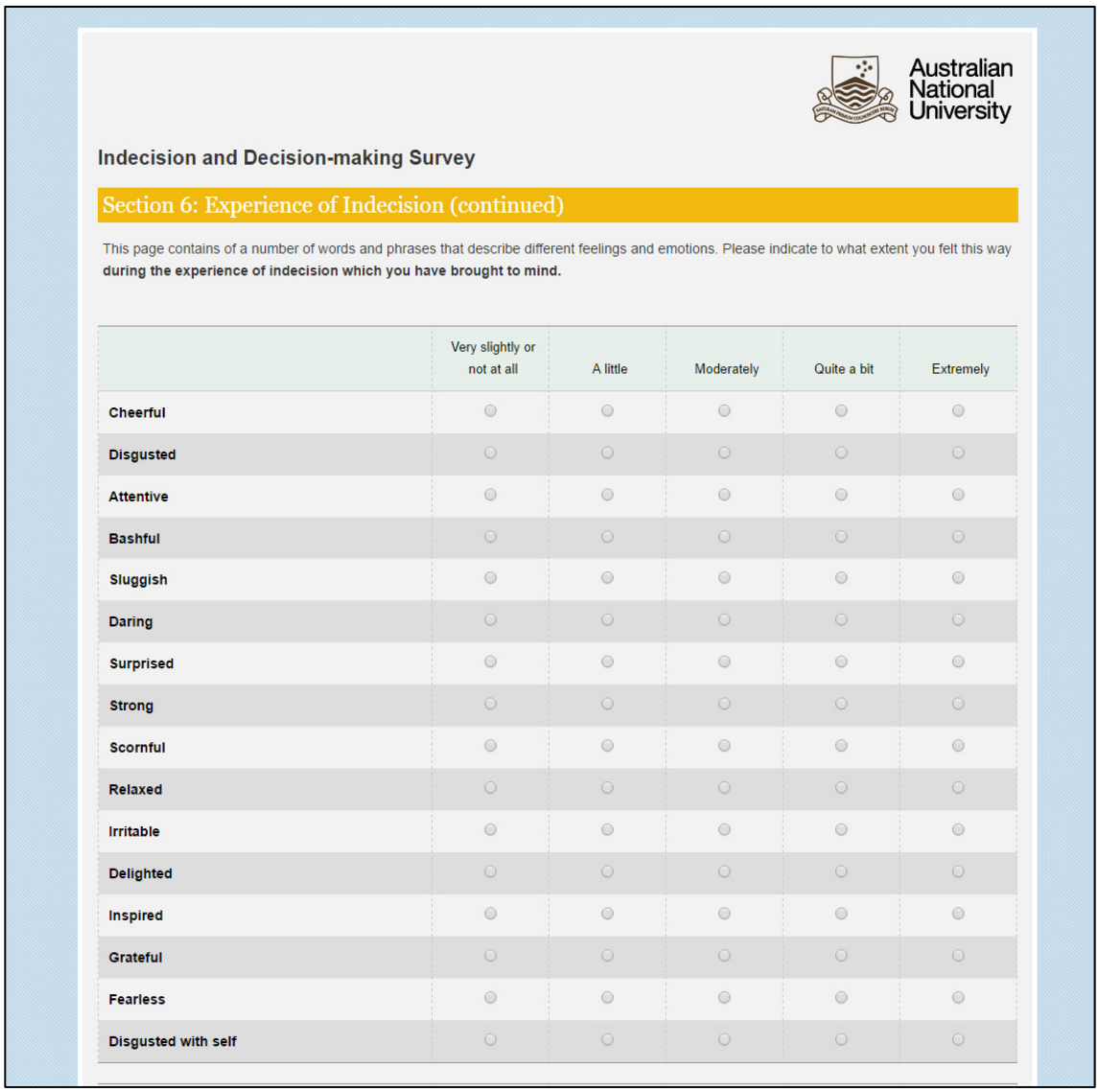
These questions, and those on the following few pages, relate to this recent event in which you experienced significant indecision. Please answer the questions as accurately as you can based on the event that you just identified, not other memories/events which may emerge as you answer the questions.

1. **How difficult was it for you to bring to mind this recent indecision event?**
   Extremely difficult — Extremely easy

2. **How important was this event to you?**
   Not at all important — Extremely important

	Not at all		Vaguely		Distinctly		As clearly as if it were happening now
3. As I remember the event, I feel as though I am reliving the original event.	○	○	○	○	○	○	○
4. As I remember the event, I can hear it in my mind.	○	○	○	○	○	○	○
5. As I remember the event, I can see it in my mind.	○	○	○	○	○	○	○
6. As I remember the event, I or other people are talking.	○	○	○	○	○	○	○
7. As I remember the event, I can feel now the emotions that I felt then.	○	○	○	○	○	○	○
8. As I remember the event, I can recall the thoughts or internal conversation that I had then.	○	○	○	○	○	○	○
9. As I remember the event, I can recall the setting where it occurred.	○	○	○	○	○	○	○

Figure A4.2.1. Screenshot from Study 1 online survey showing visual analogue scale items in relation to the indecision event, and beginning of Autobiographical Memory Questionnaire items.



Australian National University

Indecision and Decision-making Survey

Section 6: Experience of Indecision (continued)

This page contains of a number of words and phrases that describe different feelings and emotions. Please indicate to what extent you felt this way **during the experience of indecision which you have brought to mind.**

	Very slightly or not at all	A little	Moderately	Quite a bit	Extremely
Cheerful					
Disgusted					
Attentive					
Bashful					
Sluggish					
Daring					
Surprised					
Strong					
Scornful					
Relaxed					
Irritable					
Delighted					
Inspired					
Grateful					
Fearless					
Disgusted with self					

Figure A4.2.2. Screenshot from Study 1 online survey showing beginning of PANAS-X items.

Appendix 4.3: Antecedents and Consequences of Indecision

Please indicate the extent to which each item below describes a cause or contributing factor to the indecision experienced during the event which you just described.

Item	Antecedent text
1.	Not enough time to decide
2.	Not wanting to decide at all, but rather wanting just to keep things as the way they are
3.	Worrying about whether I will have made the best possible decision
4.	Too many options
5.	Options were too different
6.	Getting lost in my own thoughts and imagination
7.	Too much information about each option
8.	Too much time to decide
9.	Worrying about what other people will think of the decision I will have made
10.	Expecting to find a better option that I was yet to discover
11.	Conflicting or contradictory information about the options
12.	Options were too similar
13.	Not enough information about each option
14.	Not enough options
15.	Not having other people to help me decide
16.	Too many distractions
17.	Vague information about the options

Note. Scoring: 1 = Not at all a cause of my indecision; 7 = Very significant cause of my indecision.

After experiencing indecision during the event which you described, what happened next?

Item	Consequence text
1.	I made a seemingly random decision
2.	I made a decision but tried to change my mind or undo it afterwards
3.	I continued thinking about the decision long afterwards
4.	I went and did other things instead of making a decision
5.	I ended up making a decision that I regretted
6.	I ended up making a good decision
7.	I got someone else to help me decide or make the decision for me
8.	I made multiple decisions (e.g., choosing 2 items) instead of just one
9.	I ended up not making a decision
10.	I ‘froze’ and didn’t seem to know what to do in the moment

Note. Scoring: 1 = Strongly disagree; 7 = Strongly agree.

Appendix 4.4: Exploratory Factor Analysis – PFIS

Identifier	Item Text	Item-Factor Loading		
		1	2	3
PFI 3	Sometimes I become impatient over my indecisiveness.	**.584**	.206	.177
PFI 6	I tend to struggle with most decisions.	**.541**	**.471**	.228
PFI 12	I wish I did not worry so much about making errors.	**.541**	.187	.301
PFI 4	Sometimes I see so many options to a situation that it is really confusing.	**.521**	.127	.063
PFI 9	I prefer situations where I do not have to decide immediately.	**.475**	.210	.133
PFI 5	I can be reluctant to commit myself to something because of the possibility that I might be wrong.	**.467**	.343	.328
PFI 14	I find myself reluctant to commit to new ideas but find little comfort in remaining with the tried and true.	.330	.131	.098
PFI 1	I may struggle with a few decisions but not very often. *	.370	**.618**	.178
PFI 2	I never put off making important decisions. *	.104	**.585**	.095
PFI 10	I rarely doubt that the course of action I have selected will be correct. *	.282	**.455**	.267
PFI 8	Regardless of whether others see an event as positive or negative I don't mind committing myself to it. *	.140	.340	.052
PFI 13	Decisions rarely weigh heavily on my shoulders. *	.167	.322	.232
PFI 7	Even after making an important decision I continue to think about the pros and cons to make sure that I am not wrong. *	.193	.144	**.803**
PFI 11	I tend to continue to evaluate recently made decisions.	.215	.205	**.607**

Note. Cells with item-factor loadings of > .4 are shaded. * Item is reverse scored. Kaiser-Meyer-Olkin measure = .878; Bartlett's test: $\chi^2(91) = 1207.636$, $p < .001$.

Appendix 4.5: Correlations Between Indecisiveness Factor and Summed Scale Scores

	Indecisiveness Factor Score		
Summed Scale Score	**Aversive**	**Avoidant**	**Ruminative**
Aversive	.858	.278	.213
Avoidant	.295	.833	.195
Ruminative	.302	.251	.941

Note. $n = 325$, all $ps < .001$

Appendix 4.6: Exploratory Factor Analysis – AMQ

Item Text	Factor		
	1	2	3
As I remember the event, I can see it in my mind.	**.820**	.062	.181
As I remember the event, I can feel now the emotions that I felt then.	**.746**	.241	-.100
As I remember the event, I feel as though I am reliving the original event.	**.719**	.273	-.029
As I remember the event, I can recall the thoughts or internal conversation that I had then.	**.716**	.128	.121
As I remember the event, I can hear it in my mind.	**.694**	.316	.057
As I remember the event, I can recall the setting where it occurred.	**.608**	-.039	.343
As I remember the event, I feel that I travel back to the time when it happened; that I am a subject in it again, rather than an outside observer tied to the present.	**.582**	.161	.086
As I remember the event, I or other people are talking.	**.510**	.315	.015
Sometimes people know something happened to them without being able to actually remember it. As I think about the event, I can actually remember it rather than just knowing that it happened.	**.468**	.280	**.450**
This memory is significant for my life because it imparts an important message for me or represents an anchor, critical juncture, or a turning point.	.202	**.754**	-.082
Since it happened, I have thought or talked about this event.	.172	**.727**	-.154
As I remember the event, it comes to me in words or in pictures as a coherent story or episode and not as an isolated fact, observation, or scene.	.247	**.568**	.293
As I remember the event, it comes to me in words.	.175	**.455**	.334
To what extent is your memory of the event distorted by your beliefs, motives, and expectations rather than an accurate reflection of the event as a neutral observer would report it? *(higher scores = more accurate)*	-.090	-.072	**.768**

I believe the event in my memory really occurred in the way I remember it and that I have not imagined or fabricated anything that did not occur.	.088	.132	**.705**
If another witness to the event, who you generally trusted, told you a very different account of the event, to what extent could you be persuaded that your memory was wrong?	-.132	.055	**-.594**

Note. Item-factor loadings of > .4 are shaded. Kaiser-Meyer-Olkin measure = .869; Bartlett's test: $\chi^2(120) = 1657.789$, $p < .001$.

Appendix 4.7: Regression Table – AMQ Factors and Indecisiveness Factor Scores

Predictor	AMQ vivacity		AMQ rehearsal and narration		AMQ accuracy	
	β	*t*	β	*t*	β	*t*
Aversive indecisiveness	.109	1.999 *	-.039	-.860	-.017	.763
Avoidant indecisiveness	.086	1.586	-.148	-3.227 **	-.113	.041 *
Ruminative indecisiveness	.100	1.842	.091	1.991 *	.016	.771
Recall difficulty	.116	2.128 *	-.028	-.615	.134	.016 *
Importance of decision	.138	2.534 *	.542	11.761 ***	-.132	.018 *
Model R^2_{adj}	.057		.327		.043	

Note. * $p < .05$, ** $p < .01$; *** $p < .001$.

Appendix 4.8: Antecedents and Consequences of Indecision: Exploratory Factor Analyses

Antecedents of Indecision

Item text	Factor			
	1	2	3	4
Too many options	**.831**	.136	-.133	-.014
Too much information about each option	**.741**	.125	.157	.139
Options were too different	**.741**	.040	.155	-.164
Getting lost in my own thoughts and imagination	**.495**	-.012	**.450**	.171
Expecting to find a better option that I was yet to discover	**.459**	.335	.229	.168
Not enough information about each option	.054	**.848**	-.031	-.084
Vague information about the options	.068	**.828**	-.024	.055
Not enough options	.051	**.601**	.138	-.217
Options were too similar	**.424**	**.484**	-.248	.215
Conflicting or contradictory information about the options	**.409**	**.456**	.312	.105
Not having other people to help me decide	.166	**.413**	**.404**	-.182
Too many distractions	.365	**.406**	.138	.246
Worrying about what other people will think of the decision I will have made	.048	.025	**.704**	-.005
Not wanting to decide at all, but rather wanting just to keep things as the way they are	-.042	.096	**.679**	.158
Worrying about whether I will have made the best possible decision	.316	-.042	**.504**	-.154
Too much time to decide	.207	.125	.131	**.750**
Not enough time to decide	.103	.319	.085	**-.704**

Note. Kaiser-Meyer-Olkin measure = .796, Bartlett's test: $\chi^2(136) = 1439.097$, $p < .001$. Cells with item-factor loadings > .4 are shaded.

Consequences of Indecision

Item text	Factor		
	1	**2**	**3**
I did other things instead of making a decision.	**.756**	.080	.118
I ended up not making a decision.	**.745**	.195	-.009
I 'froze' and didn't seem to know what to do in the moment.	**.662**	.224	.185
I made multiple decisions (e.g., choosing 2 items) instead of just one.	**.532**	.090	.207
I ended up making a good decision.	-.185	**-.728**	-.061
I ended up making a decision that I regretted.	.159	**.725**	.347
I continued thinking about the decision long afterwards.	.277	**.611**	-.046
I got someone else to help me decide or make the decision for me.	**.437**	**-.502**	.103
I made a seemingly random decision.	.146	-.091	**.872**
I made a decision but tried to change my mind or undo it afterwards.	.219	.409	**.649**

Note. Kaiser-Meyer-Olkin measure = .750, Bartlett's test: $\chi^2(45) = 679.080$, $p < .001$. Cells with item-factor loadings > .4 are shaded.

Appendix 5.1: ANU Human Research Ethics Committee Approval and Variation (Study 2)

Study 2 Ethics Approval

Human Ethics Protocol 2009/561

aries@anu.edu.au <aries@anu.edu.au> Thu, Jan 28, 2010 at 8:45 AM
To: Stephen.tang@anu.edu.au
Cc: michael.smithson@anu.edu.au, human.ethics.officer@anu.edu.au

THIS IS A SYSTEM-GENERATED E-MAIL. PLEASE DO NOT REPLY. SEE BELOW FOR E-MAIL CONTACT DETAILS.

Dear Mr Stephen Tang,

Protocol: 2009/561
Indecision: An exploration of information evaluation and expectancy-based processes

I am pleased to advise you that your Human Ethics protocol received approval by the Deputy Chair of the HREC on 27 January 2010.

For your information:

1. Under the NHMRC/AVCC National Statement on Ethical Conduct in Human Research we are required to follow up research that we have approved. Once a year (or sooner for short projects) we shall request a brief report on any ethical issues which may have arisen during your research or whether it proceeded according to the plan outlined in the above protocol.

2. Please notify the committee of any changes to your protocol in the course of your research, and when you complete or cease working on the project.

3. Please notify the Committee immediately if any unforeseen events occur that might affect continued ethical acceptability of the research work.

4. The validity of the current approval is five years' maximum from the date shown approved. For longer projects you are required to seek renewed approval from the Committee.

All the best with your research,

Kim

Ms Kim Tiffen
Human Ethics Manager/rDNA Committee Secretary
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http://anu.edu.au/ro/ORI/Human/human_index.php

CRISCOS Provider Code: 00120C

Study 2 Ethics Variation Approval

Variation - Human Ethics Protocol 2009/561
1 message

aries@anu.edu.au <aries@anu.edu.au> Fri, May 21, 2010 at 8:10 AM
To: Stephen.tang@anu.edu.au
Cc: michael.smithson@anu.edu.au, human.ethics.officer@anu.edu.au

THIS IS A SYSTEM-GENERATED E-MAIL. PLEASE DO NOT REPLY. SEE BELOW FOR CONTACT DETAILS

Dear Mr Stephen Tang,

Protocol: 2009/561
Indecision: An exploration of information evaluation and expectancy-based processes

I am pleased to advise the Chair of the Human Research Ethics Committee has approved the variation you submitted on 14/05/2010 requesting:

"Please see the details of variation and updated information sheet/recruitment poster uploaded to the documents tab. Thanks!

~~~~~~~~~~
Chair's response 18/5/2010

1. Provide supporting statement from the supervisor.
2. What happens if there is an abnormal ECG?
3. How will you provide feedback on the outcomes to the participants?
~~~~~~~~~~
Researcher's response 20/5/2010
1. Attached is a letter of support from my supervisor.

2. I am not medically qualified and do not have training in the clinical interpretation of ECG. As such, I am not able to make a formal assessment of normal vs. abnormal ECG. Participants will be advised at the beginning of the study that the ECG will not be used for clinical purposes. However, if visually obvious irregularities are observed during the baseline ECG measurement/observation at the beginning of the study (e.g. significant tachycardia, bradycardia or arrythmias), the study may be discontinued and participants encouraged to consult a medical professional.

As explained in the variation statement, the ECG data will be used for statistical analyses of heart rate variability rather than looking at sinus rhythms in the raw electrocardiograph. As such, apart from observation of the ECG trace at the beginning of the study to ensure that the leads are properly connected, the heart rate data will be processed later. Finally, only a 1-lead ECG will be used as opposed to a medical 12-lead ECG, limiting any clinical information that can be obtained.

3. Consistent with the approved protocol, no personal feedback/results will be made available to participants. Attached is a revised debriefing sheet which will explain some of the hypotheses and the purpose of the tasks in the study."

You may now commence your research as per your modified protocol.

All the best with your research,

Yolanda

Appendix 5.2: CDT Instructions

General Introduction

In this part of the study, you will be evaluating information about a number of different charities. Although their names will not be shown, the information which you will see relates to registered Australian charities which work to benefit people in the community.

During this task, you will have the opportunity to donate $2.00 to one of these charities. This is a real-life decision task and not a simulation or hypothetical scenario.

High Self-Focus Condition

While you evaluate and choose a charity, your performance and decision-making behaviour will be compared with other participants. Your donation of $2 will be given to your chosen charity only if you meet the necessary performance standard. Otherwise, your donation will be allocated to a random charity.

In this task, your heart rate will be constantly monitored using the chest strap. The equipment will record changes in your physiological reactions in real time – some which you might notice, others which you probably won't notice – which reflect your decision-making capacity and stress level.

At the end of the study, you will be asked to give a short explanation about why you decided to choose your selected charity.

Low Self-Focus Condition

In this task, your task is to explore and examine the charities available, as an objective and independent evaluator of the information.

Keep doing this until you have identified a charity to which you would like to make your $2 donation. Your donation will go directly to the charity.

Appendix 5.3: Exploratory Factor Analysis of Composite IS-R and PFIS (Study 2)

		Factor		
Identifier	**Item**	**1**	**2**	**3**
PFI 6	I tend to struggle with most decisions.	**.634**	.395	.183
ISR 11	It seems that deciding on the most trivial thing takes me a long time.	**.602**	.005	.174
PFI 3	Sometimes I become impatient over my indecisiveness.	**.587**	.145	.188
ISR 3	I find it easy to make decisions.*	**.533**	.339	.289
ISR 8	I become anxious when making a decision.	**.472**	**.436**	.321
ISR 4	I like to be in a position to make decisions.*	**.458**	.245	-.110
PFI 4	Sometimes I see so many options to a situation that it is really confusing.	**.438**	.024	.212
PFI 14	I find myself reluctant to commit to new ideas but find little comfort in remaining with the tried and true.	**.418**	.100	.096
PFI 9	I prefer situations where I do not have to decide immediately.	**.415**	.344	-.031
ISR 6	I usually make decisions quickly.*	**.405**	.327	.140
PFI 5	I can be reluctant to commit myself to something because of the possibility that I might be wrong.	.360	.153	.299
PFI 2	I never put off making important decisions.*	-.020	**.769**	.114
ISR 2	I always know exactly what I want.*	.130	**.652**	.052
ISR 1	I try to put off making decisions.	.314	**.571**	.177
PFI 1	I may struggle with a few decisions but not very often.*	**.457**	**.534**	.179
PFI 10	I rarely doubt that the course of action I have selected will be correct.*	.269	**.504**	.249
ISR 5	Once I make a decision, I feel fairly confident that it is a good one.*	**.425**	**.487**	.263
PFI 8	Regardless of whether others see an event as positive or negative I don't mind committing myself to it.*	.236	.330	.196
PFI 7	Even after making an important decision I continue to think about the pros and cons to make sure that I am not wrong.	.232	-.249	**.721**
PFI 11	I tend to continue to evaluate recently made decisions	-.006	.124	**.653**
ISR 7	Once I make a decision, I stop worrying about it.*	.220	.262	**.642**
ISR 10	After I have chosen or decided something, I often believe I've made the wrong choice or decision.	.362	.394	**.531**
ISR 9	I often worry about making the wrong decision.	**.410**	.285	**.528**
PFI 13	Decisions rarely weigh heavily on my shoulders.*	.041	.246	**.434**
PFI 12	I wish I did not worry so much about making errors.	.377	.167	**.430**

Note. Kaiser-Meyer-Olkin measure = .851; Bartlett's test: $\chi^2(300) = 1089.732$, $p < .001$. * Item is reverse scored. Cells with item-factor loadings > .4 are shaded.

Appendix 5.4: Model Effects for Indecisiveness and Self-Regulatory Mode on LDT Self-Report Items

	Indecision		Difficulty		Fatigue		Comparative Speed		Comparative Accuracy	
	F	η_p^2	F	η_p^2	F	η_p^2	F	η_p^2	F	η_p^2
Order (LDT first)	.008	<.001	.688	.007	6.078*	.061	.335	.004	1.387	.015
ΔHF-HRV	.044	<.001	1.195	.013	.532	.006	.162	.002	.709	.007
Native English	4.208*	.043	4.227*	.043	.128	.001	5.120*	.052	12.127***	.114
Indecisiveness										
Aversive	7.809**	.077	.406	.004	7.513**	.074	5.524*	.056	5.781*	.058
Avoidant	<.001	<.001	.088	.001	.126	.001	2.183	.023	.739	.008
Δ*HF-HRV* ×										
Aversive	1.297	.014	.026	<.001	4.037*	.041	.369	.004	.414	.004
Avoidant	.598	.006	.006	<.001	.002	<.001	.026	<.001	2.050	.021
Model R^2_{adj}		**.099**		**<.001**		**.085**		**.064**		**.162**

Note. For the *F*-tests reported above, $df_1 = 1$ and $df_2 = 94$; * $p < .05$; ** $p < .01$; *** $p < .001$.

Appendix 5.5: GZLM Model Effects for CDT Behavioural Measures

	Decision time		Total seen		Unique seen		Excluded		Confirmatory ratio (time)		Confirmatory ratio (events)	
	$\chi^2(1)$	*p*	$\chi^2(1)$	*p*	$\chi^2(1)$	*p*	$\chi^2(1)$	*p*	$\chi^2(1)$	*p*	$\chi^2(1)$	*p*
Similarity	.104	.747	.141	.707	.472	.492	.165	.684	.118	.732	.008	.930
Self-focus	.001	.973	.339	.560	.184	.668	.237	.627	2.683	.101	.794	.373
Native English	**10.975**	**.001**	1.035	.309	2.043	.153	.580	.446	.515	.473	.604	.437
ΔHF-HRV	2.683	.101	.722	.396	.233	.630	.004	.951	2.184	.139	.040	.841
Aversive	**4.612**	**.032**	2.105	.147	1.611	.204	.195	.659	2.831	.092	1.833	.176
Avoidant	.014	.905	.672	.412	.430	.512	1.062	.303	1.777	.182	1.848	.174
Similarity × Self-focus	**7.435**	**.006**	**3.932**	**.047**	**4.133**	**.042**	1.390	.238	.591	.442	1.325	.250
Similarity × Aversive	2.428	.119	1.120	.290	2.286	.131	.121	.728	**12.394**	**< .001**	**11.091**	**.001**
Similarity × Avoidant	1.004	.316	2.321	.128	2.509	.113	3.133	.077	.101	.750	.546	.460
Self-focus × Aversive	2.317	.128	.002	.962	.053	.818	.237	.626	.030	.863	.254	.615
Self-focus × Avoidant	3.898	.048	.839	.360	.779	.377	1.032	.310	.664	.415	.292	.589
Similarity × Self-focus × Aversive	.118	.731	.002	.968	<.001	.995	**4.541**	**.033**	.424	.515	.182	.670
Similarity × self-focus × avoidant	1.779	.182	.963	.327	.760	.383	.118	.732	1.763	.184	1.540	.215
Total seen	-	-	-	-	-	-	**74.682**	**< .001**	-	-	-	-

Appendix 5.6: Model Effects for Indecisiveness and Experimental Conditions on CDT Self-Report Items

	Indecision		Difficulty		Regret		Self-consciousness		Fatigue	
	F	η_p^2	F	η_p^2	F	η_p^2	F	η_p^2	F	η_p^2
Similarity	5.773 *	.063	1.606	.018	4.637 *	.051	.278	.003	3.120	.035
Self-focus	5.710 *	.062	.663	.008	2.624	.030	2.098	.024	5.581 *	.061
Native English	.411	.005	2.247	.025	.004	<.001	.672	.008	.045	.001
ΔHF-HRV	.012	<.001	.334	.004	.170	.002	1.702	.019	.327	.004
Indecisiveness										
Aversive	8.709 **	.092	7.399 **	.079	22.489 ***	.207	6.607 *	.071	7.485 **	.080
Avoidant	.889	.010	.283	.003	1.032	.012	.078	.001	1.114	.013
Similarity × Self-focus	3.441	.038	.738	.009	1.669	.019	.782	.009	.785	.009
Similarity ×										
Aversive	1.175	.013	1.087	.012	.041	<.001	1.012	.012	.139	.002
Avoidant	.322	.004	.080	.001	2.806	.032	1.540	.018	3.919	.044
Self-focus ×										
Aversive	1.098	.013	.521	.006	.078	.001	.649	.007	.113	.001
Avoidant	1.708	.019	.553	.006	.128	.001	1.102	.012	.485	.006
Similarity × Self-focus ×										
Aversive	1.327	.015	6.759 *	.073	.654	.008	.003	<.001	.465	.005
Avoidant	1.976	.022	1.165	.013	2.726	.031	3.189	.036	5.414 *	.059
Model R^2_{adj}	**.167**		**.097**		**.187**		**.060**		**.110**	

Note. For the F-tests reported above, $df_1 = 1$ and $df_2 = 86$; * $p < .05$; ** $p < .01$; *** $p < .001$.

Appendix 6.1: ANU Human Research Ethics Committee Variation Approval (Study 3)

Variation - Human Ethics Protocol 2012/155
1 message

aries@anu.edu.au <aries@anu.edu.au> Fri, Aug 17, 2012 at 11:21 AM
To: Stephen.tang@anu.edu.au
Cc: human.ethics.officer@anu.edu.au, michael.smithson@anu.edu.au

THIS IS A SYSTEM-GENERATED E-MAIL. PLEASE DO NOT REPLY. SEE BELOW FOR CONTACT DETAILS

Dear Mr Stephen Tang,

Protocol: 2012/155
The subjective experience, cognitive appraisal and affective structure of indecision

I am pleased to advise the Chair of the Human Research Ethics Committee has approved the variation you submitted on 16/08/2012 requesting:

"Approval is sought to vary this protocol to allow for the running of an online decision-making behavioural experiment.

This variation request is to allow the researchers to conduct an online decision-making experiment as a follow-up component to the online survey already run.

The information sheet, to be displayed online, is attached. Like in the original protocol, consent will be inferred by participants beginning and completing the survey after reading this information. Incomplete surveys are not stored in this survey interface – i.e. data will only be collected if the participant finishes the survey."

You may now commence your research as per your modified protocol.

All the best with your research,

Kim

Ms Kim Tiffen
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http://researchservices.anu.edu.au/ori/human/index.php

Appendix 6.2: Card Sampling Game Instructions

Indecisiveness Focus Condition

You will be playing a game designed to trigger the experience of indecision through the making of difficult choices. During the game, pay attention to any thoughts, feelings, sensations and impulses that you observe within you during a difficult decision. At the end of each round, you will be asked to write a few sentences about your own experience of indecision.

Even though you haven't started the game yet, think about what kinds of thoughts, self-talk, emotions, or bodily sensations might you experience when you're making difficult decisions in this game. Please write a few sentences about whatever first comes to mind.

Strategy Focus Condition

You will be playing a game which involves evaluating complex information and making strategic decisions. During the game, pay attention to what strategies and processes you are using to make good decisions. At the end of each round you will be asked to write a few sentences about why you made the decision that you made.

Even though you haven't started the game yet, think about what kinds of strategies, skills or tactics might be useful to get the best possible score in the decision-making game which you're about to play. Please write a few sentences about whatever first comes to mind.

Control Condition

You will be playing a simple computer-based card game. At the end of each round, you will have the opportunity to have a short rest before going on to the next part of the study.

Before we start the game, let's do a baseline calibration. Type out the following passage, but leave out all the vowels (A, E, I, O and U) in each word. For example, the phrase *This is a colourful sentence* should be re-written as *Ths s clrfl sntnc*.

In a warm haze the sultry light
Is absorbed, not refracted, by grey stone.
The dahlias sleep in the empty silence.
Wait for the early owl.

Appendix 6.3: Card Sampling Card Values – Distributions

The values on the cards were generated from discretised beta distributions, using different parameters for α and β for each deck. Four pairs of decks were created, as described in Table A6.3.1. There were 20 cards in each deck, based on values of *x* between .05 and 1 in steps of .05. The resultant probability distribution function was multiplied by 200. This resulted in payoff values which were integers between 0 and 200. The card values were presented, on click, in random order with replacement.

Table A6.3.1

Parameters for Beta Distributions Used to Generate Card Values

	Deck 1		Deck 2	
	α	β	α	β
Pair 1	1.0	1.5	1.5	1.0
Pair 2	3.0	6.0	6.0	3.0
Pair 3	0.7	0.5	0.5	0.7
Pair 4	4.0	5.0	5.0	4.0

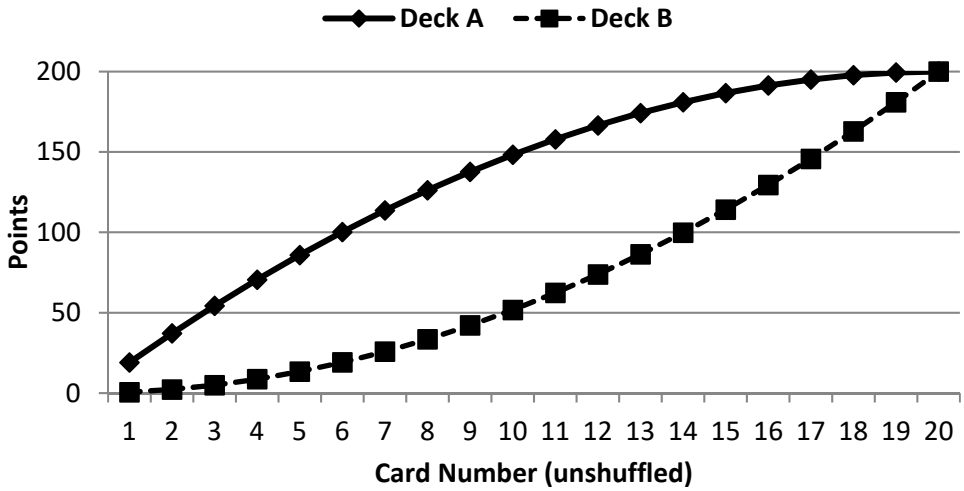

Figure A6.3.1. Values of two decks based on two discretised and transformed beta distributions.

Card values for Pair 1 are plotted in Figure A6.3.1, where Deck 1 has been randomly assigned to Deck A, and Deck 2 as Deck B. That is, for Deck A, α = 1, β = 1.95, and for Deck B, α = 1.95, β = 1. The mean value of all cards in Deck A is 130.59 whereas the mean of all cards in Deck B is 69.41. The variance is identical (variance = 4137.50; *SD* = 64.32). Deck A would therefore be the better deck to choose in this scenario.