

PATHWAYS FROM SCHOOL BULLYING TO ADULT AGGRESSION: A LONGITUDINAL STUDY

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I declare that this thesis is my own original work

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Abstract

This study identifies developmental processes underlying the relationship between school bullying and physical aggression in emergent adulthood. The data are drawn from the ‘Life at School’ project, a longitudinal study of schooling, socio-emotional functioning, and bullying in a sample of young people living in the Australian Capital Territory. This study consists of three waves of self-report data collected from 88 females and 63 males (N=151) during primary school (Time 1), high school (Time 2) and emerging adulthood (Time 3). The study extends earlier analyses to consider the relative significance of distal functioning and the proximal effects of heavy drinking and work/study roles during the transition to emerging adulthood in shaping pathways from school bullying to adult aggression.

Results showed that bullying in either primary school or high school, and being male, increased the risk of adult aggression. Once bullying and sex were controlled, socio-emotional functioning (including emotion/behaviour regulation and school adjustment) did not make unique contributions to the prediction of adult aggression. To further investigate the effects of bullying, four bully trajectory groups were identified from children’s reports: a non-bully group, a child-limited group (bullying during primary school only), an adolescent-onset group (taking up bullying during high school), and a persistent group (bullying during both primary and high school). Moderated regression showed that a) frequent drinking at Time 3 significantly increased aggression only for the persistent bully group, and b) participation in university study, in comparison with being in the workforce, was significantly associated with lower levels of aggression only for persistent and adolescent-onset bullies. That is, both the past and present were important, but their effects only became apparent when considered in combination.

Given the pivotal significance of drinking and university participation for continuity of aggression, the second analysis stage used path analyses to explore the chains of events leading to these adult variables, and subsequent aggression. First, adaptive emotion regulation during high school directly predicted less frequent adult drinking, while continuity in such adaptive regulation between primary and high school was mediated by continuity in positive school connectedness. Second, greater parental education increased the likelihood that young people would attend university, both directly, and indirectly by increasing academic functioning during high school. In contrast, childhood impulsivity was directly related to a decreased likelihood of university participation and, in turn, to more frequent adult aggression. The final issue examined was the extent to which these mediated pathways from childhood were the same or different across the four bully trajectory groups. Descriptive comparisons indicated that pathways to drinking and work/study role were consistent across the four groups, with the partial exception of the adolescent-onset bullies.

The analyses show that the expression of bullying and adult physical aggression is flexible, open at each stage of development to influence from personal resources (e.g., capacity for adaptive shame management), social resources (e.g., parental education), and changing institutional settings, through for example the cultural and behavioural norms that characterise the university, workplace, and drinking environments and which constrain aggressive behaviour or promote a sense of future orientation. Patterns of adult aggressive behaviours are thus shaped not just by past bullying, but by the subtle interplay of emergent adult settings and experiences, socio-emotional functioning in school contexts, and family social capital.

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INTRODUCTION AND OVERVIEW

The prevention and control of physical aggression is a matter of high priority for nations all over the world. Physical aggression occurs in both public and private places; between men and women, adults and children, family members and friends; between strangers; between work colleagues; in the military, in the home, and on the street. Of particular concern in Australia is violence amongst young people. Official crime statistics show that people aged between 15 and 25 years report violence victimisation rates higher than other demographic groups (Australian Bureau of Statistics, 2008). Although Australian data on rates of violent offending are far from perfect, some sources suggest recent declines in violence, especially amongst juveniles age 15 to 19 years old (Bricknell, 2008). Youth violence nonetheless has symbolic significance beyond statistical trends and is perceived by many, especially the media, as a barometer of social disorder and disorganisation (O'Connor & Cameron, 2002). One consequence is political motivation to enact increasingly harsh laws targeting young people, resulting in expansion of prison facilities and other extremely expensive crime control policies that burden health and welfare systems. However, any act of violence has costs beyond the purely economic. Violence causes emotional distress, physical injury and sometimes tragic death, destroying the lives of individuals and families, and damaging social relationships. For these reasons, the questions of why aggressive acts occur, why some people behave more aggressively than others, and where the childhood roots of the problem lie are important issues for scientific enquiry.

The present study uses longitudinal data to examine the development of physical aggression amongst a sample of young adults aged 18 to 22 years in Canberra, Australia. In the early stages of this research I met with several groups of young people (including workers, apprentices, and students) to talk broadly about their experiences of victimisation and aggression in day-to-day contexts. One group of young men (aged 19

years old) described how easy it was to get into fights and violent encounters when they were out drinking at night in the town centre.

Dave: Everyone's drunk there, so you go out there, you mix one type of drunk guy who's a fighter and another fighter drunk guy and they just have a blue.

Ben: Don't even have to be fighters—they got mates there then they're mental

Interviewer: So what sort of situation would you see happen?

Dave: Spilt drinks, like.

Ben: Not even that, like—it's absolutely ridiculous. I've had some nights, in the last three months, longer maybe, I can't go out without either someone hitting me or trying to pick me. One night I was trying to get from Academy to Mooseheads (*a night club and a pub respectively*) which is only about 200 metres, and I almost got into five fights, one of which, the fight actually happened and the guy got stabbed.

Dave: Last time I was out—usually it's bloody Luke or Heaton, someone that gets me in a fight—we're walking round a corner and Heaton said something just under his breath, near these other guys. We just kept on walking, and as they were walking past, one of the guys just looked at me and said, '*What did you say?*' and started going absolutely mental, hit me in the head a couple of times, and started pushing me. I'm just going, '*What's going on?*'—'cos he didn't really hit me that hard. I'm just going, '*Huh? What?*' and his mates were all going, '*Don't worry, don't worry, he's just off his head, don't worry just leave him alone, leave him alone.*' They didn't know what was going on, all the bouncers ran over and broke it up, and I'm still going, '*Yeah, what's his problem, what's going on?*' It just takes something stupid like that.

This story suggests that aggressive encounters were a relatively common, even anticipated, occurrence during a night out on the town for Dave, Ben and their friends. It also suggests several possible explanations for why the aggressive conflicts arose. Most obvious are situational precipitators in the immediate physical and social environment. The incidents described appeared to have 'flared up' in a fairly spontaneous and opportunistic manner, occurring as reactions to the prompts and provocations in the environment rather than as planned assaults. Factors that probably triggered and exacerbated the conflicts were alcohol and intoxication, encouragement from peers, provocation from other intoxicated young men, and more worryingly, the occasional presence of weapons. One conclusion about the cause of the incidents could be that the young men's aggressive behaviour was mostly due to such situational factors

in the ‘here and now’. In other words, under certain circumstances, anybody can get into a fight (*‘everyone’s drunk there...they got mates there then they’re mental’*).

However, Dave and Ben also observed that some people are ‘fighters’, who are more likely to be violent than others. Dave says that his mates Luke and Heaton are mostly likely to ‘get him into a fight’. Does this mean that Luke and Heaton have a tendency to be more violent than Dave, regardless of (or in addition to) the effects of alcohol and other situational aggravators? If so, where does this tendency come from?

Developmental research points to the influence of a range of experiences earlier in life, including harsh parenting, poverty, hyperactivity and impulsivity, low IQ, and, of course, childhood antisocial and externalising behaviour (Farrington, 2007b). What role, then, does the past play relative to the ‘here and now’?

The present study addresses this question by exploring pathways from bullying in childhood to physical aggression in early adulthood. A large part of the substantial literature on the causes of aggression focuses on the ‘then’ side of the story, using longitudinal data to investigate which factors measured early in life predict future aggressive behaviour. One of the most consistent findings in this literature is that the best predictor of aggressive behaviour in adolescence and adulthood is the level of aggressive behaviour at younger ages (Huesmann & Moise, 1998). A form of aggression that is widespread amongst children is school bullying. Do school bullies become aggressive young adults? Why might some young people with a history of school bullying continue to behave aggressively during the transition to young adulthood? Conversely, why do some bullies become peaceable young adults? How many young adults ‘take up’ aggressive behaviour after a relatively placid childhood and adolescence and why might this occur?

Although there are few longitudinal studies of bullying with a timeframe beyond early adolescence, it is generally assumed that children who bully other students at

school will be more likely than non-bullies to be physically aggressive as young adults. A robust observation within the criminological literature, however, is the phenomenon of the age-crime curve. This describes the finding that, across the whole population, rates of antisocial and delinquent behaviour peak during adolescence and decline during early adulthood. The early adult period is a time when the direction of the normative, group-level or population-wide trajectory for aggressive behaviour is downwards (Brame, Nagin, & Tremblay, 2001; Hayford & Furstenberg, 2008; Loeber & Hay, 1997). Nevertheless, there is a paucity of longitudinal studies tracking bullying from childhood to adulthood and asking whether and how bullying feeds into aggressive behaviour in adulthood.

This study is able to address this problem by using longitudinal data from a sample of 151 young Australians surveyed at ages 11, 14 and 20 to investigate how bullying develops from childhood through adolescence and how it is manifested in young adulthood in the form of physical aggression. This three-wave dataset spans a ten-year period and encompasses two major life transitions: the transition from primary school to high school, and from high school to the emerging adult worlds of work and study. Drawing on concepts from life-course and systems theories of human development, the central aim of the present research is to examine how individual and contextual factors over two important developmental transitions—from high school to early adulthood, and from primary school to high school—shape developmental pathways and intensify or moderate the relationship between bullying during the school years and physical aggression in early adulthood. I focus particularly on the effect of the social and institutional changes that accompany the transition into adulthood. Specifically, I investigate whether and how heavy drinking and work and study experiences in the immediate post-high school years interact with a person's history of bullying to open up or close off pathways to adult aggression.

Background to the study: The context of the ‘Life at School’ project

The data for this study were drawn from the ‘Life at School’ project, a longitudinal investigation of schooling, social functioning, and behaviour in a sample of young Australians. The study includes three waves of self-report questionnaire data collected over ten years. The first wave of data was collected in 1996 (Time 1), when children were in primary school (modal age 11). Subsequent waves were collected after three years (in 1999; Time 2), when children were in high school (modal age 14), and after a further seven years (in 2006; Time 3), by which time the children had graduated from high school (modal age 20). Several cross sectional studies have been published using data from the first wave (Ahmed, 2001; Ahmed & Braithwaite, 2004a, 2004b) and one using data from the second wave (Morrison, 2006). Braithwaite et al. (2003) and Ahmed (2006) report some longitudinal findings across waves one and two. This is the first study to report longitudinal findings across the three waves.

At Time 1 and Time 2, the study participants were all attending schools in Canberra, in the Australian Capital Territory (ACT). At T3, the participants were working and studying, and the majority (93%) were still living in the ACT. The ACT is the smallest of the seven Australian states and territories. It lies within south-east New South Wales, and the region was selected in the early 20th century as the future site of the nation’s capital city, Canberra. Today, the territory has a population of 344,000 and is almost entirely taken up by the Canberra urban area. As the capital, Canberra has several universities (the Australian National University and the University of Canberra, as well as campuses of the Australian Catholic University and the University of New South Wales) and is the administrative home for the federal government, public service, and defence forces, making government and education two of the territory’s largest industries. One consequence is that the ACT is one of the most economically and socially advantaged areas in Australia. For example, the ratio of professionals to

tradespersons is higher than the rest of the country, and the ACT is the only state or territory where the ratio of male to female wage earners is equal. Reflecting these distinctive employment opportunities, the territory has the highest average level of education, lowest unemployment rate, and highest average household income of any Australian state or territory (Australian Bureau of Statistics, 2007, 2009).

It is against this economic backdrop that the data in the ‘Life at School’ project were collected. Consistent with overall trends, the rates of participation in employment and higher education amongst school leavers in the ACT are also above the national average (Marks, Fleming, Long, & McMillan, 2000). By the time the children in the sample had reached the third wave of the study, they had graduated from high school into an environment with an above average level of tertiary education and a below average level of youth unemployment, but also a local labour market dominated by professional jobs, for which a university degree would usually be required. The effects of employment and education during the transition to early adulthood will be discussed in Chapter 2. Details of sample characteristics and procedures are described in Chapter 4.

Overview of chapters

Chapters 1, 2 and 3 review relevant theories and past research, and develop a research model to guide the analysis. Chapter 1 discusses evidence and theory relating to the development of aggression and bullying from childhood to early adulthood, and introduces a developmental framework to conceptualise the longitudinal link between school bullying and adult aggression. At the conclusion of the chapter I draw on the empirical evidence and concepts from developmental theory to present the research model that guides the remainder of this study.

Chapter 2 is focused on the present, Time 3. The aim is to consider the effect of experiences occurring during the critical transition to young adulthood on the bullying-aggression connection. I discuss characteristics of the life phase between the ages of 18 and 25, which has become known in the developmental field as ‘emerging adulthood’. Drawing on longitudinal research in criminology and concepts from developmental theory, I review evidence for how two important emerging adult ‘transition factors’—drinking and work/study status—might act to exacerbate or mitigate the course of aggressive behaviour from childhood.

In Chapter 3 I turn to a discussion of the past: specifically, a discussion of theories of how the past influences the future with respect to aggressive behaviour. This chapter aims to identify a range of school-years factors that are associated with bullying, and that might also, either directly or indirectly, act to increase or decrease future adult aggression. I focus on two aspects of socio-emotional functioning that are developmentally salient during childhood and adolescence—emotional/behavioural regulation and adjustment to school—and discuss how these factors may mediate associations between school bullying and adult aggression. A major focus in the chapter is on the construct of shame management. The capacity to adaptively manage the experience of shame is an aspect of emotion regulation that is linked to healthy social functioning. Waves 1 and 2 of the Life at School study were originally designed to develop and test a theory of shame management and its relationship to school bullying. Here I review those findings and suggest how and why shame management might predict adult aggression. At the end of the chapter I return to the research model from Chapter 1, drawing together the discussion from the first three chapters to present specific research questions.

The sample, procedures and measures are described in Chapter 4, and Chapters 5, 6 and 7 and 8 present results of the data analyses.

Chapter 5 presents preliminary analyses focusing purely on data from the first two waves of the study, when children were in primary school (Time 1) and high school (Time 2). Based on children's reports of bullying during primary school and high school, I identify four bully trajectory groups: a non-bully group (children who never bullied in primary school or high school), a child-limited bully group (children who bullied in primary school only), an adolescent-onset group (children who began to bully after the transition to high school), and a persistent bully group (children who persisted in bullying across both primary school and high school). Chapter 5 describes how these groups differ in terms of socio-emotional functioning during primary school and high school, and assesses how these factors relate to continuity in bullying over the primary school to high school transition. The aim is to present a clear picture of past configurations of behaviour and functioning, to provide a contextual basis for later analyses concerning adult aggression.

In Chapter 6, I present analyses designed to examine effects of the emerging adult transition factors—drinking, and work/study status—on continuity from childhood bullying to emerging adult physical aggression. Three issues are addressed. First, to what extent do bullying and other measures of school adjustment and shame management during primary school and high school predict adult physical aggression? This assesses how much of the variance in adult aggression may be accounted for by the effects of 'the past'. Second, I examine whether, controlling for childhood and adolescent behaviour and functioning, heavy drinking and work/study experiences during early adulthood promote or inhibit continuity from bullying to aggression. In other words, to what extent do proximal experiences contained within the transition to adulthood account for variance in physical aggression beyond the effects of earlier risk? Finally, are these effects the same for the whole population, or do they differ depending on the degree to which children engaged in bullying across primary school and high

school? To answer this question, I estimate a moderated regression model to examine whether the relationships between drinking and aggression and work/study status and aggression during adulthood are different among the four longitudinal bully trajectory groups (non-bullies, child-limited bullies, adolescent-onset bullies, and persistent bullies).

Results revealed significant two-way interactions between bully trajectory group and drinking, and bully trajectory group and work/study status, but no significant three-way interaction among these predictors. This means that the effects of the Time 3 transition experiences on adult physical aggression were specific to certain bully trajectory groups. First, drinking increased adult aggression only for individuals who were persistent bullies. In the other three groups, drinking was essentially unrelated to adult aggressive behaviour. Second, university participation decreased adult aggression for both persistent bullies and those individuals who ‘took up’ bullying during high school. For children who never bullied, or whose bullying was limited to childhood, post-high school work/study experiences were not related to adult aggressive behaviour. Thus, drinking amplified the bullying-aggression relationship and higher education disrupted it, but these effects were not uniform across the sample. Putting this the other way around, only some adolescent-onset and persistent bullies were at increased risk of violence in early adulthood, with the risk depending on institutional role (for both groups) and drinking frequency (for the persistent group).

Given the pivotal importance of drinking and institutional role for continuity of aggression, analyses in Chapters 7 and 8 are designed to explore the Time 1 and Time 2 influences on those adult variables. The aim is to discover chains of events linking behaviour and functioning during the school years with adult aggression by way of drinking and work/study experiences. Path analysis was the most suitable tool because it facilitated the simultaneous exploration of paths linking variables across the three

time periods. Two separate path models were constructed to examine, in Chapter 7, mediated pathways from school bullying to adult aggression via drinking, and in Chapter 8, mediated pathways via work/study status. These models were designed to consider the influence of demographic factors, school adjustment, impulsivity and emotion regulation during the school years on Time 3 drinking and institutional role, and subsequent links to aggression. For example, what aspects of school adjustment and emotional functioning in childhood and adolescence are associated with continuity and discontinuity in bullying? How do these factors, either alone or in combination, contribute to different levels of adult drinking or work/study experiences?

Chapter 7 focuses on pathways to adult aggression that involve drinking. The results highlight a socio-emotional pathway to adult aggression via drinking. Specifically, it is shown that reciprocal relationships between socially adaptive shame management and positive school adjustment over the primary school-high school transition predict less frequent adult drinking, and in turn, less aggression. These findings suggest that adaptive shame management reflected the degree to which students held a ‘stake’ in the conventional normative standards of their school, and that this functioned to decrease the risk of frequent adult drinking, and subsequently, physical aggression.

Chapter 8 examines pathways to adult aggression via university participation (or not) in early adulthood. These findings highlight the way in which various aspects of social and personal capital resources available during childhood predict different work and study outcomes in early adulthood, and subsequently relate to aggression. Specifically, greater parental education increased the likelihood that young people would attend university, both directly, and indirectly by association with academic functioning during high school. In contrast, childhood impulsivity was directly related

to a decreased likelihood of university participation ten years in the future, and in turn, more frequent adult physical aggression.

The final issue addressed in Chapters 7 and 8 is whether these longitudinal pathways are the same or different across the four bully trajectory groups. I utilise simple descriptive statistics to examine the extent to which the Time 1 and Time 2 predictors of drinking and university participation identified in the path models are similarly associated with these outcomes within each bully trajectory group.

Comparisons between groups suggest that pathways are mostly similar in each of the four groups, with some exceptions arising for those individuals who began to bully during high school. This raises the question of whether quite different sets of risk or protective factors during primary school and high school contribute to continuity in aggression for adolescent-onset bullies.

Chapter 9 concludes. I suggest that combinations of particular contexts and settings during early adulthood can offer youth on trajectories of aggression (as evidenced by bullying at school) unique opportunities to turn their behaviour around. Others, however, may exacerbate aggressive behaviour patterns. These different effects may be interpreted in the light of what is known about the cultural and behavioural norms that characterise the university, workplace, and drinking settings in which young people negotiate the transition to adulthood. It is possible that the degree to which different settings control inhibitions, impose constraints on aggressive behaviour, and promote a sense of future orientation in young adults can influence those on aggressive trajectories. For instance, frequent drinking contributes to and reflects a lack of forward thinking and may exacerbate youthful tendencies to direct action. Similarly, employment opportunities for young people with no post-secondary qualifications are limited to low-status and short-term jobs with limited career potential. Those who attend university, however, forego immediate financial rewards to embark on an

institutionalised route to vocational independence, surrounded by other young adults also constructing their future selves.

The path models showed, moreover, that the ‘turning point’ of university study and the ‘snare’ of drinking were not random events, but were strongly shaped by distal experiences, socio-emotional functioning, and demographic background. For some former bullies, these pathways were additionally protective against adult aggression. For persistent bullies, for example, poor socio-emotional functioning during school increased the likelihood of Time 3 physical aggression because poor functioning increased Time 3 drinking. Poor socio-emotional functioning (and subsequent frequent drinking) in the absence of persistent bullying, on the other hand, did not mean that members of other trajectory groups would suddenly experience a late onset of aggression in early adulthood.

In concluding, I propose that the progression from childhood bullying to adult aggression is not inevitable, but flexible, open at each stage of development to influence from changing social and institutional settings. Identifying the ‘leverage points’ at which positive change is most likely to occur, and understanding how this comes about, will be crucial for developing interventions that can effectively reduce both school bullying and early adult physical aggression.

CHAPTER 1:

AGGRESSION AND BULLYING IN LIFE-COURSE DEVELOPMENTAL PERSPECTIVE

The aim of this chapter is to summarise what is known about the developmental course of aggressive behaviour from childhood to adulthood. The chapter is organised in four sections. The first section sets the stage with a discussion of the nature of aggression and bullying, including issues of measurement, prevalence, and the place of bullying within a broader construct of aggressive and antisocial behaviour. The second section presents empirical evidence from longitudinal criminology and psychopathology research relating to continuity of aggression from childhood to early adulthood. This includes a discussion of key findings regarding patterns of stability and change in aggressive behaviour across the lifespan, and the implications of these patterns for the current investigation. The third section introduces a developmental framework to conceptualise the bullying-aggression connection. Drawing on systems theories of development, I identify key theoretical concepts such as the integration of people with the multiple contexts of their lives, the idea of plasticity in development, and how the dynamics of person-context relations at developmental transitions contribute to stability and change in behaviour. In the final section I apply these concepts to develop a conceptual model that will be used to guide the research.

Throughout the chapter, I focus more on the shape and direction of the developmental course of aggressive behaviours than on explanations for why they occur. Although mention is made of various factors that are assumed to be associated with onset, persistence and desistance in aggression in the course of the discussion, Chapters 2 and 3 contain more detailed treatments of mechanisms of continuity and change in bullying and aggression in the context of this study.

1. Aggression and bullying

Defining aggressive behaviour

The term 'aggression' has many meanings and interpretations. One of the most commonly encountered definitions of aggression is 'unprovoked actions that are intended to produce harm or injury' (Cairns & Cairns, 2000). However, there are several aspects of this definition that present problems for researchers, particularly those relying on self-report or observer reports of aggression. First, attribution of intent or motivation is very difficult to establish because intent is not an observable behaviour, and perpetrators often deny that harm was intended (Loeber & Hay, 1997). Similar evaluative ambiguity surrounds the qualification that the act be unprovoked. It is unclear who should make this judgement, as perpetrators usually claim that acts were provoked ('she made me do it'), victims usually claim that they did not provoke the perpetrator, and observers may not be impartial or have access to all the facts (Tremblay, 2000).

A more general difficulty associated with the use of aggression as a single term is that it describes a great number of specific behaviours that vary in form, function and severity (Loeber & Hay, 1997). Aggression manifests as various forms of violence such as rape, murder, robbery, physical fighting and assault, as well as verbal aggression such as threats of violence and verbal abuse. These broad classifications may be further divided into actual behaviours; physical assault, for example, may involve kicking, punching, hitting, scratching and so on. Another important distinction is made between direct and indirect aggression. Direct aggression is manifest during confrontations that involve verbal threats and abuse or physical violence. Indirect aggression, on the other hand, is non-confrontational and refers to a wide range of hostile behaviours that are aimed at causing emotional distress to another person through damage to social

relationships, such as spreading rumours or gossiping about a third person, or excluding others from social groups and activities (Crick & Grotpeter, 1996). Finally, aggressive acts may be categorised as reactive or proactive. Reactive aggression is enacted in response to perceived provocation, in self-defence, or defence of others. Individuals who attack others in the absence of any discernable provocation demonstrate proactive aggression. Depending on the situation, defensive aggressive behaviour is more likely to be tolerated or culturally accepted, but proactive aggression is generally reviled and is often regarded as an indicator of individual psychopathology (Cairns & Cairns, 2000; Kokko & Pulkkinen, 2005).

Studies show that these different manifestations of aggression are likely to be intercorrelated to some extent, and often occur together. Aggression should not, therefore, be regarded as a unitary construct, but as an umbrella term for a wide range of different behaviours that occur during interactions between two or more people within a social and cultural context (Cairns & Cairns, 2000). There is also a significant overlap between aggressive behaviours and other non-aggressive antisocial and externalising behaviours and characteristics. Physical aggression in adolescence, for example, is correlated with impulsivity, risk-taking, oppositional and defiant behaviour, substance use, and property offences (Jessor, Donovan, & Costa, 1991; Vassallo, et al., 2002).

This complexity means there is wide variation in the ways that aggression is operationalised for research purposes. There is no standard set of items for the developmental study of aggression. Many studies use measures of aggression that combine verbal, physical and indirectly aggressive behaviours (for example, Kokko & Pulkkinen, 2000) while others include individual constructs such as impulsivity, hyperactivity, irritability, emotion regulation and restlessness (Pulkkinen & Pitkänen, 1993), or other non-aggressive disruptive and problem behaviours such as lying, truancy and drug use. For example, Nagin and Tremblay (1999) point out that the 23-

item aggression sub-scale of the Child Behavior Checklist (CBCL), widely used in longitudinal studies of the development of aggression, contains only three items that refer to physical aggression.

The present study is concerned with direct verbal and physical aggression in young adulthood. This does not include related personality characteristics, such as hyperactivity, emotional aspects of aggression such as feelings of anger, or other antisocial behaviours. The focus is on self-reported behaviours that involve actual harm to another person, including assaults and fights, and on verbal threats of physical harm. Measures and methodology are described in detail in Chapter 4.

Bullying: Nature and prevalence

The term bullying describes an aggressive social process in which a more powerful individual deliberately and repeatedly directs harmful actions towards a weaker individual (Olweus, 1978; Smith, 2004). Bullying occurs amongst people of all ages in a wide variety of social institutions, including workplaces, the military, and within families and peer groups (Rayner & Höel, 1997; Rigby, 2002b). Most research, however, has been conducted in the school environment. Since Dan Olweus' (1978) seminal Scandinavian research the field has expanded to comprise thousands of studies conducted in several countries, including the United Kingdom, Italy, Spain, Japan, the United States and Australia (Ahmed & Braithwaite, 2004a; Kochenderfer-Ladd, 2004; Owens, Daly, & Slee, 2005; Rigby, 1996; Schäfer, Korn, Brodbeck, Wolke, & Schulz, 2005; Slee, 1995; Smith, 2004; Smith, Talamelli, Cowie, Naylor, & Chauhan, 2004). The research literature has expanded as bullying has become more prominent as a social problem.

The harmful actions involved in bullying may take several forms. These sub-types closely mirror the various manifestations of aggression described earlier, and may be broadly divided into direct and indirect behaviours. Direct forms of bullying involve

verbal behaviours like teasing, ridicule, calling victims nasty names, and making threats of violence (Austin & Joseph, 1996; Bond, Carlin, Thomas, Ruin, & Patton, 2001; Boulton & Smith, 1994; Boulton & Underwood, 1992; Mynard & Joseph, 1997; Rigby, 2002a); as well as physically violent behaviours such as hitting, kicking and pushing (Hanish & Guerra, 2002; Hawkins, Pepler, & Craig, 2001; Kochenderfer-Ladd & Ladd, 2001). Bullying is usually regarded as proactive aggression, characterised by unprovoked behaviours that are enacted in order to achieve some goal, often assumed to be maintenance of the uneven power relationship between bully and victim. For this reason, the majority of studies do not define incidents involving reactive aggression, such as a physical fight between two children, as examples of bullying. Indirect bullying (also referred to as relational aggression, psychological bullying, or covert bullying) has received increased research attention since the 1990s and involves a range of behaviours intended to inflict emotional distress upon the target, including spreading untrue rumours about a person, talking behind someone's back, exclusion from group activities, and other behaviours in which social relationships are used as a means of harm (Crick & Bigbee, 1998; Crick & Grotpeter, 1996; Espelage & Swearer, 2003; Owens, Shute, & Slee, 2000).

Different studies have measured bullying in different ways. The most commonly used method is the anonymous self-report questionnaire (Hawker & Boulton, 2000). Other methods of assessing bullying include teacher, peer, or parent report (Kumpulainen, Räsänen, & Henttonen, 1999), and peer nomination procedures, in which children use a class list to anonymously identify the classmates they regard as bullies or victims. The number of nominations received is then used to create bully or victim profiles for each child (Pellegrini & Long, 2002; Salmivalli, Lappalainen, & Lagerspetz, 1998).

Each of these methods suffers from the same ambiguities as the broadly defined aggression scales mentioned above. Some peer-and self-report measures ask children about the incidence of specific behaviours, while others simply query the incidence of 'bullying.' For example, Camodeca, Terowgt and Schuengel (2002) identified bullies by asking pupils to nominate peers who best fitted each of seven aggression items, such as 'he's just plain mean', 'he tries to pick fights with people', and 'he makes fun of people.' Espelage, Bosworth and Simon (2001) assessed bullying with five self-report items, including 'called other students names', 'said things about students to make others laugh', and 'pushed, shoved, slapped, grabbed or kicked.' Scholte and colleagues (2007), on the other hand, asked pupils to nominate peers who 'often bully or pick on' other children. The method employed to assess bullying in waves 1 and 2 of the present study is an adaptation of Olweus' (1978) instrument, and is one of the most widely-used self-report measures in the literature. Children are provided with Olweus' definition of bullying, followed by one or two items asking how often over a set period of time he or she has engaged in the sort of behaviour described (for example Pepler, Jiang, Craig, & Connolly, 2008). The definition generally reads as follows:

We call it bullying when someone repeatedly hurts or frightens someone weaker than themselves on purpose. Remember that it is not bullying when two young people of about the same strength have the odd fight or quarrel. Bullying can be done in different ways: by hurtful teasing, threatening actions or gestures, name-calling or hitting or kicking.

The definition is intended to emphasise three key characteristics of bullying: intentionality, repetition, and power imbalance (Solberg & Olweus, 2003). However, it also makes the range of aggressive behaviours that a child could report as 'bullying' very broad, encompassing both direct and indirect forms of aggression. In consequence, it is usually impossible for researchers to know whether a child's report of bullying refers to physical violence, verbal name-calling, or nasty insults. This ambiguity is acknowledged as a problem in the bullying field (Crick & Dodge, 1999; Farrington,

1993) and researchers have begun to address measurement issues (Vaillancourt, et al., 2008). Unfortunately, the present study is not in a position to differentiate between different aggressive behaviours involved in bullying. Children's bullying behaviour was assessed at wave 1 and wave 2 by self-report questionnaire. After reading the above definition of bullying, two items queried the frequency with which children had bullied other students during the last school year (Chapter 4 has further details of this measure). It is therefore recognised that the measure of bullying used here may have captured incidents of physical violence, relational aggression, or both.

Prevalence estimates for bullying vary widely even across studies employing the same assessment methods. For example, a U.S. self-report study (Nansel, et al., 2001) of 15,686 youth in grades 6-10 found that 13% of the sample had bullied 'sometimes or more often' in the last school term, 10.6% had been bullied, and 6.3% were both bullies and victims. Similarly, a self-report study of 283 German high school students (Schäfer, et al., 2005) found that 18.7% had bullied another student at least once or twice in the last 12 weeks, 13.4% were victimised, and 8.5% reported both bullying and being bullied. Somewhat higher rates were reported in an Australian study (Forero, McLellan, Rissel, & Bauman, 1999) of 3,918 early adolescents, of whom 23.7% admitted to bullying at least once in the last term, 12.7% reported victimisation, and 21.5% identified as both bullies and victims. Finally, a Finnish study (Salmivalli & Nieminen, 2002) that employed a peer nomination technique with 1,062 children aged 10–12 years old classified 10.6% as bullies, 6.2% as victims, and 1.9% as bully-victims. Despite differing prevalence rates, these examples demonstrate that involvement in bullying exchanges is a relatively common experience in primary and secondary schools across Europe, North America, and Australia.

Bullying, aggression and externalising behaviour

Bullying is not an isolated problem. It is one aspect of aggression, just as aggression is one aspect of a more general syndrome of externalising and antisocial behaviour (Espelage & Swearer, 2003; Farrington, 1991, 1993). From a psychiatric perspective, persistent aggression in childhood and adolescence, including bullying, is one element of diagnostic behaviour for conduct disorder (American Psychiatric Association, 2000). Although the behaviour of most bullies would not be extreme enough to warrant a diagnosis, numerous studies confirm that children who bully are more likely than their classmates to be impulsive, hyperactive, and to be rated by teachers as disruptive and disobedient (Craig, 1998; Kumpulainen, et al., 1998; Olweus, 1978; Salmivalli & Nieminen, 2002; Tremblay, et al., 1991).

Research consistently shows that bullies are more likely than their classmates to be involved in a variety of aggressive exchanges within the school environment, exhibit different types of aggressive behaviour at different times, and are recipients of aggressive behaviour from peers. For example, bullies are more likely than non-bullies to be involved in fights (Nansel, et al., 2001), to use both direct and indirect verbal aggression (Craig, 1998), and to react to provocation with aggression. Salmivalli and Nieminen (2002) used peer and teacher reports to evaluate proactive and reactive aggression amongst primary school children. While both bullies and victims were more aggressive than children who reported no bullying involvement, bullies were found to be both proactively and reactively aggressive. This overlap may be one reason why bullies are more likely to experience victimisation than non-bullies. A child labelled as a 'bully' might proactively direct aggressive behaviours towards another child at one time; at another time he or she might react with aggression to another's behaviour; at other times his or her interactions might involve fights (Roland & Idsøe, 2001).

Children who bully others in school are also far more likely than non-bullies to be involved in aggressive and violent interactions in non-school contexts. In an investigation of the link between U.S. children's experiences at home and at school, Duncan (1999) found that 13 year-old students who bullied their peers at school were also likely to bully their siblings at home. In later adolescence, bullies are more likely than non-bullies to get into fights and carry weapons outside school (Liang, Flisher, & Lombard, 2007; Nansel, Overpeck, Haynie, Ruan, & Scheidt 2003; Nansel, et al., 2001). Although an underlying aggressive interaction style may be responsible for these associations, behaviour such as weapon carrying could also have a situational explanation. It is possible, for instance, that bullies' outside-school behaviour is due to a higher exposure to situations in which there is potential for violence. This was tested in a study of school bullying and aggressive behaviour amongst Swedish 14 year-olds (Andershed, Kerr, & Stattin, 2001). Consistent with expectations, school bullying was associated with a higher risk of assaulting others and carrying weapons on the street, as well as a greater likelihood of being the victim of a violent attack. Bullies were also more likely than non-bullies to loiter on the streets and spend nights away from home. These findings suggest that although students who bullied were more likely to respond with aggression given the opportunity, they were also more likely to put themselves in situations that opened up opportunities for aggressive acts.

In summary, although some bullies may exhibit more frequent or more severe problem behaviour than others, it is clear that children and adolescents who target their peers in this way are more likely to be involved in a range of violent and non-violent aggressive exchanges both within the school setting and in other social contexts. They are also at increased risk of engaging in other forms of antisocial behaviour. It is possible that this is due to the presence of some stable personality characteristic that guides behaviour in different situations. Findings from the developmental

psychopathology literature suggest that aggressive children have developed certain cognitive and emotional strategies that interact with situational factors to promote aggressive behaviour in a variety of settings. Models of social-information-processing (Crick & Dodge, 1994; Huesmann, 1988), for example, describe how the ways in which aggressive children interpret, evaluate, and respond to cues during social interactions tend to promote aggressive behaviour. Similar processing deficiencies may also underlie school bullying. A study conducted in the Netherlands (Camodeca, Goossens, Schuengel, & Terwogt, 2003) showed that 9 and 10 year-old bullies were more likely than non-bullies to notice aggressive social cues during a potentially unpleasant peer interaction, to interpret ambiguous cues as hostile, to feel more angry in the situation, were more likely to choose to retaliate, and claimed to find it easy to behave aggressively. Of course, social-information-processing deficits are only one explanation for why some children bully more than others. In Chapter 2 I discuss factors associated with bullying in greater detail. Here it is sufficient to note that the research reviewed so far supports the interpretation that bullying may be one manifestation of a stable tendency towards aggressive responding across a variety of settings.

If aggressive behaviour reflects a stable tendency, it seems logical to assume that children who bully will continue to respond with aggression as they grow into adulthood. Aggression that manifests as bullying in childhood or adolescence would be expected to manifest in diverse antisocial behaviours throughout the life span. What is the evidence that school bullying manifests as adult aggression? Research on the consequences of bullying beyond early adolescence is minimal (Nansel, et al., 2001). Longitudinal studies of school bullying are much less common than cross-sectional studies and tend to cover only short time periods. Most are restricted to examination of changes in children's bullying status between two primary school grades. Fewer studies examine change during high school and adolescence, an even smaller number explore

change across the primary school-high school transition (Schäfer, et al., 2005), and only a handful of studies have followed the development of bullying beyond high school and into young adulthood. Indeed, I am aware of only two longitudinal studies with a specific focus on adult outcomes of childhood bullying. These include findings from Olweus' (Olweus, 1978, 1993a) analysis of follow-up data at age 23 for a sub-sample of Swedish boys assessed as bullies in grades 6-9; and the Finnish 'From a Boy to a Man' study (Almqvist, et al., 1999), an epidemiological study of psychiatric disorder which has followed a large sample of the 1981 Finnish birth cohort into early adulthood. Findings from both studies show that boys who were bullies in childhood were at increased risk of criminal offending and antisocial behaviour in early adulthood.

Olweus examined the incidence of officially recorded crime at age 23 amongst boys with different histories of bullying in middle childhood. Bullies were identified on the basis of peer and teacher nominations (some details of measures are given in Olweus, 1979). Approximately 60% of the young men who were bullies in grades 6-9 had been convicted of at least one offence by the age of 24, and 35–40% of the original bullies had recorded three or more convictions. The conviction rate amongst men with no history of bullying was 10%. Unfortunately some details of Olweus' follow-up are unclear. For instance, he does not report how many boys were in the original or follow-up sample, what sort of offences they had committed as young adults, or whether longitudinal analyses controlled for other factors such as socio-economic status.

Sourander and colleagues report more detailed longitudinal findings for a sample of 2,500 boys assessed on a range of measures at age 8. On the basis of self, parent and teacher reports, children were classified into several bullying groups, including a reference group (those who never bullied or bullied only occasionally; 84% of the sample), those who bullied frequently (6%), and those who both bullied and were victimised frequently (3%). Children, parents and teachers also completed a range of

screening instruments for child psychiatric symptoms. The researchers reported the incidence of officially recorded criminal behaviour at ages 16 to 20 (Sourander, Jensen, Rönning, Elonheimo, et al., 2007) and psychiatric disorder at ages 18 to 23 (Sourander, Jensen, Rönning, Niemelä, et al., 2007) for these different bullying groups. Young men who were members of the frequent bully and bully-victim groups were significantly more likely than young men in the infrequent/non-bully group to have committed an offence, and bully-victims were likely to have committed more than one offence. After adjusting for socio-economic status, frequent bullying and frequent bullying/victimisation predicted violent and property offences, but not drug, traffic, or drink-driving offences. Members of the bullying groups were also more likely to be diagnosed with antisocial personality disorder in early adulthood.

These findings suggest that a history of frequent bullying during primary school increased risks for violent criminal offending and antisocial behaviour in early adulthood amongst this sample of Finnish men. However, further analyses showed that continuity from bullying to adult problem behaviour depended upon severity of psychiatric symptoms in childhood. Criminal and antisocial outcomes were only apparent for those former bullies who were above the clinical cut-off for conduct disorder and hyperactivity in childhood. Frequent bullying without concurrent psychiatric difficulties was not associated with elevated risk of later problematic outcomes. This shows that although there was evidence of continuity from school bullying to later aggression, there was also substantial discontinuity. The overall pattern masked important subgroup differences. The implication is that the connection between school bullying and adult aggression may not be as straightforward as is sometimes assumed. Although there are few bullying-specific longitudinal studies into adulthood, the fact that bullying is a form of aggression means that findings from the much larger body of work examining varied trajectories of aggression and externalising behaviour

across the lifespan may shed light on possible developmental consequences of bullying beyond the school years.

The following section reviews findings from developmental criminology and psychopathology on stability and change in aggression from childhood to young adulthood. I do not aim to provide an exhaustive review of all the findings from this substantial field. Rather, I draw on the literature to identify broad patterns of continuity and discontinuity, consider major theories developed to account for these patterns, and discuss some of the unanswered questions and controversies arising from the research.

2. Continuity and discontinuity in aggression from childhood to adulthood

Before reviewing the empirical research on the developmental patterns of aggression from childhood to adulthood, it is essential to consider what is meant by the terms *stability*, *continuity*, and *discontinuity*. Stability refers to the observed level, amount or frequency of the same behaviour or characteristic over time. Examples include weight gain over a six-month period, or the number of fights that a child gets into per week across grades 5, 6 and 7 (Lerner, 2002). Although correlation coefficients are usually interpreted as indicators of stability, this refers to relative, rather than absolute, stability. Absolute stability would be observed if there were no weight changes for any study member, or each child reported the exactly the same number of weekly fights at each measurement. Relative stability is observed if study members retain their ranking relative to other study members over time, even if changes occur at the population level. For example, if a boy got into five fights a week in grade 5 and three fights a week in grade six, yet remained in the top 10% of the sample, his behaviour would be stable relative to the other children in the study. Longitudinal studies of aggression usually demonstrate relative stability (Huesmann & Moise, 1998).

Continuity is a more general and confusing term. It can be used to describe relative stability (for example, Huesmann & Moise, 1998), but it may also refer to the relationship between a particular type of behaviour at one point and an apparently different behaviour at a later point. For example, temper tantrums in childhood might predict fighting in adolescence. This is often referred to as heterotypic continuity. It is regarded as continuity because although manifest behaviours vary over time, it is assumed they continue to arise from some specific underlying disorder, characteristic, or process (Rutter, Kim-Cohen, & Maughan, 2006; Schulenberg, Maggs, & O'Malley, 2003). There are many examples of heterotypic continuity in the longitudinal aggression literature. In the present study, any link between school bullying and adult aggression would be a form of heterotypic continuity.

Discontinuity can refer to both the absence of relative stability and the absence of heterotypic continuity. In the first case, nonsignificant correlation coefficients would show that the relative ranking of study members differs between measurement points. For example, children who report bullying in grade 5 might be no more or less likely to report bullying in grade 6 than children who did not bully in grade 5. Abrupt decreases or increases in behaviour, such as desistance from crime or late-onset offending, are also examples of this sort of discontinuity. In the second case, behaviour at one point would fail to predict a different manifestation at a later point. For example, there would be a nonsignificant relationship between teacher-rated aggression in high school and violent delinquency in early adulthood (Lerner, 2002).

Stability in aggression and bullying

One of the most consistent findings from longitudinal studies of antisocial behaviour is that the best predictor of later antisocial behaviour is current antisocial behaviour. Most longitudinal studies of aggression find that measures of the same behaviour are correlated between time points, indicating that study members generally

retain their ranking relative to aggressive behaviour in the rest of the cohort (Farrington, 2007b; Huesmann & Moise, 1998; Loeber, 1982; Loeber & Hay, 1997; Olweus, 1979; Tremblay, 2000).

For example, Cairns and colleagues (1989) assessed 220 Carolina children annually from age 10 (grade 4) to early adolescence (grade 9). Teacher-ratings and self-reports of getting into trouble at school, fighting, and arguing in grade 4 were found to account for the majority of predicted variance in the same measures taken in grade 9 for girls and boys. Stability coefficients over time were strongest for measures of fighting. In Finland, the Jyväskylä Longitudinal Study has tracked the development of 369 individuals from 8–9 years old until the age of 42 with teacher and peer reports, interviews, and adult criminal records. Findings from early waves showed that peer ratings of aggression at age 8 were significantly associated with the same measure at age 14 for both girls and boys, and teacher ratings of aggression between 8 and 14 were related for boys, but not for girls (Pulkkinen & Pitkänen, 1993). A multi-cohort study of delinquency conducted in the Netherlands collected Child Behaviour Checklist (CBCL) reports of competencies and behavioural problems from parents of 1412 boys and girls aged 4 to 14 in 1983, and 6 to 16 two years later. There was significant stability for items assessing aggression over the two-year interval for both boys and girls, with correlation coefficients averaging .66 (Verhulst & Althaus, 1988). A four-year follow-up also found significant stability for teacher reports of aggressive and externalising behaviours (Verhulst & Van der Ende, 1991). Findings from other longitudinal studies conducted in the United States, Europe, and Australia confirm the relative stability of the same measures of aggression from early childhood to adolescence (for example, Cairns & Cairns, 1994; Eron & Huesmann, 1987; Kingston & Prior, 1995; Loeber & Stouthamer-Loeber, 1998; Maughan, Pickles, Rowe, Costello, & Angold, 2000; Stanger, Achenbach, & Verhulst, 1997).

Longitudinal studies of bullying generally report stability patterns that are consistent with other measures of aggressive behaviour in childhood and early adolescence, although findings vary depending upon whether stability/continuity is assessed using continuous measures or by grouping children according to their bullying status at each time point. Correlations between measures of bullying over time are generally very high, ranging from .30 to .60 over time (Camodeca, et al., 2002; Pellegrini & Long, 2002). However, there is evidence that stability is greater for boys rather than girls. For instance, Salmivalli and colleagues (1998) reported coefficients of .34 and .52 for peer-nominated and self-reported bullying respectively amongst Finnish boys between grades 6 and 8. For the girls, in contrast, peer-nominated bullying measures were correlated at .28, and self-report measures over the two-year period were not significantly related. Studies using classification techniques consistently indicate that children who report bullying at one time point are more likely than other children in the sample to also report bullying at the next time point. Generally, these findings show that between 30% and 40% of children classified as bullies at one assessment are also classified as bullies at the next assessment (Kumpulainen, et al., 1999; Schäfer, et al., 2005; Scholte, et al., 2007; Sourander, Helstelä, Helenius, & Piha, 2000). Thus, bullying, like other measures of aggression, demonstrates relative stability during childhood and adolescence.

Heterotypic continuity in aggression and bullying

Longitudinal findings also show that childhood aggression demonstrates heterotypic continuity to a range of later problematic outcomes, including various manifestations of violence, teenage delinquency and adult offending. For instance, David Farrington and colleagues have examined the development of aggressive and criminal behaviour in the Cambridge Study in Delinquent Development, a prospective survey of 411 boys from working-class London assessed nine times over a period of 40

years from age 8 to age 48. Results indicate substantial continuity from childhood aggression to adolescent and adult aggression and offending. For example, teacher-rated aggression at ages 8, 10, 12 and 14 predicted self-reported violence at age 18, as well as officially recorded violent offending (Farrington, 1991; Farrington & West, 1981). Other major longitudinal studies report similar findings. Later results from the Jyväskylä study mentioned above showed that peer and teacher ratings of aggression at age 8 and 14 predicted violent offences up to age 20 for males (Pulkkinen, 1987), and self- and other-rated aggression at age 14 were significantly associated with self-reports of aggression at age 26 for both males and females (Pulkkinen & Pitkänen, 1993). Another Scandinavian study examined the development of aggression and crime from age 10 to 35 for 1,027 girls and boys in Örebro, Sweden. Teacher-rated aggression at age 13 predicted officially recorded crime up to age 26 for both boys and girls, with highly aggressive boys particularly likely to commit later violent offences (Stattin & Magnusson, 1989). North American studies paint a similar picture (Loeber, et al., 2005; McCord, 1992; McCord & Ensminger, 1997; Tremblay, 2002). In the Seattle Social Development project, for instance, in which over 800 children were assessed annually from age 10 to 16 and followed-up two–three times to age 27, self-reports of fighting at age 10 predicted engaging in at least some violence between the ages of 13 and 21 (Kosterman, Graham, Hawkins, Catalano, & Herrenkohl, 2001).

Continuity vs. discontinuity

Overall, the longitudinal research provides strong evidence for continuity of aggression across time and situations. No matter what the measure of aggression, individuals who are relatively more aggressive than others at earlier ages are also likely to be relatively more aggressive at later ages. The evidence for discontinuity, however, is also strong: the majority of aggressive adults were aggressive children, but most aggressive children do not become aggressive adults (Robins, 1978; Tremblay, 2000).

In other words, not everybody who is aggressive in childhood is equally aggressive in adulthood, no matter how the behaviour is assessed and no matter whether stability or continuity is the focus. For example, about half of the most aggressive boys at ages 8–10 in the Cambridge Study were still among the most aggressive at age 32, compared with about one third of the rest of the sample. Although this difference was statistically significant, Farrington (1991) notes that ‘the difference between half of one group and one third of another does not indicate a very accurate prediction over time.’ (p. 12). This effect is mirrored in the longitudinal bullying literature. Although studies generally show that children assessed as bullies at the first measurement point have the greatest likelihood of falling into the bullying group at the second measurement point, most also find that up to half the children who were bullies at the first time point ‘desist’ from bullying at the second point, while there are often substantial numbers of children who report bullying at later times who would not have been categorised as bullies at the initial assessment (Espelage, et al., 2001; Schäfer, et al., 2005).

There is thus a seeming contradiction where people are unlikely to spontaneously become highly antisocial adults, yet most of those who were antisocial as children don’t persist into adulthood (Robins, 1978). Longitudinal studies, and developmental theory, are devoted to disentangling these two seemingly contradictory facts. The process of disentanglement reveals several general patterns or principles that are frequently observed in the longitudinal literature, and, despite the presence of unresolved controversies, appear to receive broad assent amongst researchers: (a) the prevalence of aggression declines with age, (b) manifestations of aggression change with age, (c) patterns of continuity and change are not the same for everyone, (d) it is often possible to identify subgroups of individuals who exhibit distinct developmental trajectories of aggression, and finally (e) there are important contemporaneous and situational influences on acts of aggression.

a) The prevalence of aggression declines with age

Aggression is relatively stable from childhood to adulthood, but the absolute prevalence of aggression and violence at the population level declines over this period. Although studies vary in the timing of the change and the rate of the decline, longitudinal evidence clearly shows that, on average, the frequency of engaging in overtly aggressive behaviours is highest in childhood and subsequently declines throughout adolescence and into early adulthood. Findings from Richard Tremblay and colleagues' research on the origins of physical aggression suggests that it peaks at a very young age, possibly as young as two years old. These researchers have traced the development of 1,037 kindergarten boys living in poor areas of Montreal from childhood until early adulthood (Tremblay, Vitaro, Nagin, Pagani, & Seguin, 2003). Aggressive behaviour (eg. hitting, kicking, and fighting) was first rated by teachers when boys were six years old, then again at age ten and annually to 15 years old. There was a steady decline in aggression over this period. For example, only one in every eight boys who were judged to be very aggressive in kindergarten continued to exhibit the same high levels of aggressive behaviour in later adolescence (Nagin & Tremblay, 1999). Based on these results, the authors challenged the view that physically aggressive responding is acquired via social learning during childhood. Instead, they argued that children 'take up' physically aggressive acts as soon as they are physically able to do so, and the subsequent decrease in frequency of such behaviour occurs because children learn *not* to aggress over the course of development (Tremblay, 2000). Although other researchers disagree with this interpretation (for example, Loeber & Stouthamer-Loeber, 1998), most findings concur with a pattern of decreasing aggression throughout the primary school years.

The population-level decline continues throughout adolescence and into early adulthood. Loeber and colleagues, for example, followed the development of three

cohorts of boys (N=1517) from middle childhood to early adulthood in Pittsburgh, Pennsylvania (Loeber, Farrington, Stouthamer-Loeber, & White, 2008; Loeber & Hay, 1997). Annual follow-ups showed that the prevalence of physical fighting started decreasing at 15 and continued through age 17. Further analyses from the multi-cohort Dutch study mentioned above revealed steadily declining trajectories of aggression as measured with the CBCL (e.g., argues, bullies, gets into fights, attacks people, disobedient, irritable) from age 4 to 17 for both boys and girls (Stanger, et al., 1997). By early adulthood rates of violence and aggression decrease even amongst the most antisocial individuals. In the Seattle Social Development project, for example, 54% of females and 55% of males engaged in at least one act of violence after the age of 13, but reported no violence at 21. Even those who persisted in violence at 21 showed a relatively modest decline after the age of 18. A similar early adulthood pattern emerged when the men in the Cambridge study (Farrington & West, 1981) were followed up at the age of 21. Although those men who had been delinquent at the age of 18 continued to report more aggressive behaviour and offending than those who were not delinquent at 18, the overall level of antisocial behaviour, including self-reported involvement in fights, had declined for both groups.

It is possible that the prevailing pattern of desistance from antisocial behaviour over time may conceal late-onset aggression in adolescence and early adulthood amongst individuals with little prior history of such behaviour. Although researchers have not yet reached agreement on this issue, the available evidence for late-onset or increasing aggression during adolescence and adulthood is limited (Loeber & Hay, 1997; Moffitt, 2007). For example, Broidy and colleagues (2003) examined the developmental course of aggression from around ages 6 to 14 and its relationship with violence in later adolescence by comparing six datasets from New Zealand, Canada, and the United States. Similar patterns emerged across countries and studies. First,

desistance from problem behaviour continued from childhood to adolescence in all but the most chronically physically aggressive, and in some of the studies even these individuals exhibited decreasing prevalence by later adolescence. Second, none of the datasets provided evidence of the sudden appearance or abrupt increases in aggression after the age of 6. Although some longitudinal studies do identify individuals who begin to aggress in later adolescence, this subgroup generally represents less than 5% of the total sample under study (for example, Kosterman, et al., 2001; Nagin & Tremblay, 2005).

b) Manifestations of aggression change with age

The evidence presented for developmental declines in aggression appears to be contradicted by the existence of the age-crime curve. Across the developed world, officially recorded violent offending consistently peaks during the teenage years (Farrington, 2007b). For example, statistics from the US, the UK and Australia show that the peaks for crimes such as robbery, assault, and rape are around 17–18 years old (Federal Bureau of Investigation, 2004; Home Office, 2004). Self-report surveys generally find similar patterns, although the peak ages tend to fall a little earlier, around 16–17 for males and 14–15 for females (Budd, Sharp, & Mayhew, 2005; Elliott, 1994).

There are two main explanations that can reconcile the contradiction between declining prevalence of aggression on the one hand, and the observed adolescent spike in the violent age-crime curve on the other. First, although aggression as a whole declines from childhood onwards, serious violence increases with age, peaking in adolescence and declining in early adulthood (Farrington, Loeber, & Jolliffe, 2008). In other words, there are qualitative changes in manifestations of aggression at different ages. Via heterotypic continuity, one form of aggression in childhood (for example, getting into fights), predicts another more serious form of aggression in adolescence (for example, carrying a weapon). Loeber and colleagues (2008; Loeber, Keenan, &

Zhang, 1997) illustrate this pattern. Prospective and retrospective parent-and self-reports from boys in the Pittsburgh Youth Study were used to create age-of-onset curves for different forms of aggression from age 6 to 17. The different forms were minor aggression, fighting, and serious violence, such as forced sex or aggravated assault. It was shown that the age of onset was lowest for minor aggression, followed by fighting, which increased from age 10, and violence, which became more likely after the age of 12. The authors argued that this pattern represented an ordered developmental sequence, in which minor forms of aggression at younger ages ‘escalated’ to more serious forms at later ages. These findings suggest that although only a minority of children persist in serious aggression beyond childhood, those who do so are most likely to engage in violence during late adolescence.

The second explanation for the aggression decline vs. age crime curve paradox is that the societal response to violent acts changes after childhood. For instance, it is far more likely that school authorities will contact police if a 16 year-old boy punches another student in the face than if a 6 year-old boy does the same. As Cairns and Cairns observe, ‘the stakes of aggression get higher with age’ (2000, p. 421). Thus, violence committed by adolescents is much more likely to be captured by official statistics than violence committed by children. It could also be speculated that the decline in the age-crime curve after late adolescence may simply mask further developmental changes in the manifestation of aggression, as the targets of individuals’ violence shift to partners and children, such incidents being less likely to be reported.

Manifestations of bullying change with age

Consistent with trends from the wider aggression literature, longitudinal studies of bullying usually find that it declines at the population level as children grow older. Studies vary in the timing and rate of decline, but a decrease in prevalence of self-reported bullying and victimisation by late high school is a consistent finding (for a

review refer to Smith, Madsen, & Moodey, 1999). There are, however, some differences between the longitudinal patterns reported in the bullying field and those reported for aggression and antisocial behaviour more generally. First, some studies show that the prevalence in reported bullying ‘spikes’ around late childhood and early adolescence, coinciding with the transition to high school (Pellegrini & Long, 2002; Rigby, 1996, 2002b). Pellegrini and Long suggest that this occurs because children use bullying to establish positions of dominance in new social networks, and that once power relationships are in place, reports of bullying decline.

Secondly, despite an overall decline by later high school, there seems to be significant within-individual fluctuation throughout the school years. Many studies assess longitudinal stability by grouping children into status groups at the first measurement point (typically four groups including children not involved, victims, bullies, and bully-victims) and observing how many have retained or changed their status at follow-up (for example, Camodeca, et al., 2002; Espelage, et al., 2001; Salmivalli, et al., 1998; Scholte, et al., 2007). In general, findings show that the children most likely to remain within their group over time are those who were neither bullies nor victims at the first assessment. Bully groups, however, are usually much less stable, with substantial proportions of bullies desisting over time to join the not-involved group, while others appear to ‘take up’ bullying at late onset. For example, Kumpulainen, Räsänen and Henttonen (1999) examined bullying amongst 1268 Finnish children between the ages of 8 and 12 years old. Of the children who were classified in a bullying category at age 8, 44% remained in that category four years later. However, the majority of the age 12 bullies (63%) had not been classified as bullies at age 8. Similarly, Schäfer and colleagues (2005) assessed stability in a sample of 282 German children over a six-year period, from primary school (grades 2 and 3) to high school (grades 7 and 8). Thirty percent of the primary school bullies also reported bullying in

high school, and 60% of the children classified as bullies in high school had reported no bullying six years previously.

Some of this instability may be due to the shorter time frame of bullying studies, typically 2–3 years or less. Such fluctuations may be present in the longer-term aggression studies already discussed, but trajectories created over multiple waves may smooth out some short-term variance. However, it is also necessary to consider these patterns in the light of the changing nature of aggression and the way bullying is usually measured. Most studies (this one included) do not differentiate between actual behaviours involved in bullying, instead using one or two of Olweus' items to create a bullying scale, or to classify children as bullies and non-bullies. As discussed, the nature of Olweus' definition makes the range of possible behaviours very broad, encompassing physical violence to teasing. However, children's definitions of 'bullying' change substantially from early primary school to late high school. Younger children tend to give examples of bullying that are physical (including fighting) and directly verbally aggressive, while adolescents emphasise indirect behaviours (Smith, et al., 1999). Cross-sectional findings confirm that younger children also tend to report less indirect and more physical bullying, while older children and adolescents report rates of indirect aggression (Björkqvist, Lagerspetz, & Kaukianinen, 1992; Björkqvist, Österman, & Kaukianinen, 1992).

Joint trajectories of these different behaviours are not yet well understood. However, a recent study (Côté, Vaillancourt, Barker, Nagin, & Tremblay, 2007) that did examine the development of physical and indirect aggression (but not bullying specifically) during childhood showed that most children gradually declined in their use of physical aggression and about a third exhibited rising levels of indirect aggression. However, there was no evidence that children 'specialised' in one sort of behaviour

over another. The most and least physically aggressive children were also the most and least indirectly aggressive children.

The implications of such findings are that, first, an individual asked about 'bullying' at the age of 8 and at the age of 15 may report the same frequency of 'bullying' while actually reporting quite different behaviours, and second, that apparent 'late onset' bullying could reflect rising levels of indirect aggression amongst a subgroup of children. Researchers increasingly suggest that overt and covert aggressive behaviours may follow different developmental pathways, with different rates of onset, decline and desistance (Loeber, et al., 2008). It is therefore likely that inconsistencies in overall stability figures for bullying result from a conflation of distinct developmental patterns.

c) Patterns of continuity and discontinuity are not the same for everyone

To summarise the discussion so far, three main points regarding the longitudinal development of aggression have been highlighted. The evidence reviewed demonstrates that (1) early aggression tends to predict later aggression, although this prediction is far from perfect because many aggressive children do not exhibit violence in adulthood; (2) there is an aggregate decrease in aggression from childhood through adolescence and adulthood, although there may be a small group of individuals who begin to engage in later acts of physical aggression with little prior history of such behaviour; (3) aggressive acts tend to become more serious with age, and, (4) it is possible that minor aggression such as bullying escalates to physical violence during adolescence.

These summary points describe aggregate-level trends. The longitudinal evidence clearly shows, however, that these overall patterns of continuity and change do not apply equally to the whole population under study. First, the greatest stability in aggression is observed for those who are either most aggressive or least aggressive (Loeber & Hay, 1997). Amongst individuals who are aggressive, desistance in

adulthood is least likely for those who began to be aggressive at a young age, who were persistently aggressive through childhood and adolescence, and whose behaviour was relatively severe (Elliott, 1994; Loeber, 1982). In the Cambridge study, for example, men who were persistently violent into adulthood generally had an early onset of aggression, and relatively long criminal careers (Farrington, 1991).

Secondly, youth who are more deviant and troubled in general are most likely to persist in antisocial and violent behaviour beyond adolescence. Aggressive youth who experience early adversities such as harsh parenting, child abuse, and school failure; who are hampered by individual deficits like poor behavioural and emotional regulation; or who engage in many different forms of problem behaviour, are at greatest risk of adult violence (Cairns, et al., 1989; Caspi, Elder, & Bem, 1987; Farrington, 2007b; Loeber & Stouthamer-Loeber, 1998). For instance, at the beginning of this discussion I mentioned Sourander and colleagues' (2007) adult follow-up of Finnish boys who were childhood bullies. This study showed that bullying only predicted adult aggression in combination with childhood conduct disorder. In school bullying studies, the greatest stability over time is usually found for bully-victims, who represent the most troubled children in the sample (Forero, et al., 1999; Haynie, et al., 2001; Liang, et al., 2007).

Many researchers argue that apparently conflicting patterns of continuity and discontinuity mask the existence of distinct subgroups of individuals who differ in the developmental course and outcome of aggressive behaviour from childhood to adulthood (Moffitt, 2007). That is, the elements of an aggressive 'career'—onset, severity of behaviour, rate of decline or escalation, diversification, and eventual desistance—vary in a systematic fashion across different categories of people. It is further assumed that these different developmental trajectories of physical aggression vary in their etiologies and later-in-life consequences. For example, school failure in

childhood might be associated with increasing adolescent aggression for one ‘type’ but not another. Below I discuss some findings from research into developmental trajectories of aggression and antisocial behaviour. I continue to focus mostly on describing what the evidence reveals about the shape and developmental course of aggression within these various groups, reserving for Chapters 2 and 3 more detailed discussions of factors that predict onset, persistence and desistance from aggressive behaviour.

d) Developmental trajectories of aggression from childhood to adulthood

The best known of the categorical theories developed to account for continuity and discontinuity in problem behaviour is Moffitt’s (1993) developmental taxonomy of antisocial behaviour. Moffitt proposed that the shape of the age-crime curve disguised the presence of two quite distinct sub-types of people: life-course persistent offenders, and adolescence-limited offenders. According to the theory, life-course persistent antisocial behaviour begins very early in life, and is rooted in neuropsychological deficits that are present either before or soon after birth. These deficits are numerous, and the manifestations including difficult temperament, inattention, impulsivity, and delayed speech and motor development. It is proposed that environments of risk and adversity tend to exacerbate these early problems, leading to onset of antisocial behaviour that worsens throughout childhood. The adolescent and adult behaviour of life-course persistent individuals is characterised by chronicity, severity and frequency. They are predicted to engage in a wide variety of offences, particularly violent offences.

Adolescence-limited antisocial behaviour, on the other hand, first arises during adolescence. These youth show no childhood history of severe antisocial behaviour, and they do not suffer from the same neuropsychological deficits as the life-course persistent group. Instead, Moffitt argues that adolescents engage in problem behaviour during the ‘maturity gap’. The maturity gap refers to the dysphoria experienced by

adolescents during the relatively role-less years between becoming biologically mature and gaining access to the privileges and responsibilities of adulthood. In this phase, antisocial behaviour becomes an attractive way of gaining and expressing autonomy from parents and hastening social maturation. Adolescence-limited offenders are therefore predicted to mostly engage in nonviolent 'acting out' antisocial behaviours that demonstrate autonomy from school and family, such as vandalism, substance use, and public disorder offences.

The theory makes quite different predictions about desistance from offending for the two prototypes. Early adulthood is seen as a cross-roads at which the trajectories of adolescence-limited and life-course persistent individuals diverge. Developmental theories of offending identify the early adult period as a critical juncture in desistance from crime. This is because longitudinal studies of crime often find the age-normative events which occur at the transition into young adulthood, especially getting married and getting a stable job, are associated with desistance from offending (Farrington, 2007a; Stouthamer-Loeber, Wei, Loeber, & Masten, 2004). Explanations for why young adult transition events cause desistance differ. Among the hypotheses are the possibilities that events such as marriage and employment facilitate the formation of conventional social bonds that are inconsistent with an antisocial lifestyle, increase the value to the individual of law-abiding behaviour, and alter daily routines such that opportunities to engage in crime become less frequent (Catalano, et al., 2005; Farrington, 2005b; Sampson & Laub, 1993). Moffitt, however, proposes that these early adult turning point events will only generate desistance for the adolescence-limited group. She argues that the problematic developmental histories of life-course persistent individuals will greatly reduce the chances that they will form such advantageous social bonds. For instance, they are predicted to selectively get low-quality jobs and form partnerships with similarly antisocial men and women. Overall, their cognitive deficits

and tendency to be aggressive in a variety of settings will hamper their capacity to take advantage of opportunities for reform even if they do arise. Adolescence-limited offenders, on the other hand, have enjoyed a relatively well-adjusted childhood and do not share the life-course persistent group's neuropsychological deficits. This group will therefore be better equipped to establish the more responsible and conventional roles of young adulthood and stop engaging in antisocial behaviour.

These hypotheses have been tested in the Dunedin Study, a longitudinal study of 1,000 New Zealanders from age 3 to age 32. Overall, findings from this program of research confirm the individual risk characteristics and differential life outcomes for the two prototypes. As expected, the adolescent and early adult behaviour of the life-course persistent individuals was marked by physical aggression. By the age of 18, men in the life-course persistent group were more likely to be convicted of violent offences, and the adolescence-limited group for non-violent delinquent offences (Moffitt, Caspi, Dickson, Silva, & Stanton, 1996). The age 26 follow-up of these men told a similar story. The life-course persistent men continued to be characterised by violence, including against women and children in the home. They engaged in more serious offences (assault, robbery, carrying a weapon), and according to informants were more likely to get into fights than the adolescence-limited men. Although they were only 10% of the sample, the life-course persistent group accounted for 53% of the sample's self-reported violence, and 43% of officially recorded violent crime over the past year (Moffitt, Caspi, Harrington, & Milne, 2002).

Findings from other research into developmental trajectory groups of antisocial behaviour have supported many of Moffitt's original hypotheses. In particular, studies consistently identify a small group of individuals (5–10% of the sample) who begin to be aggressive early in life and who are chronically antisocial at all measurement points. Furthermore, this group is usually characterised by overt and violent offending and

serious physical aggression (Brame, et al., 2001; Donker, Smeenk, van der Laan, & Verhulst, 2003; Fergusson, Horwood, & Ridder, 2005; Kokko, Tremblay, Lacourse, Nagin, & Vitaro, 2006; Woodward, Fergusson, & Horwood, 2002). Although more debate surrounds the number and shape of adolescence-limited trajectories, findings support a basic distinction between a high-level chronic group, and another group or groups who generally behave with less severity and frequency, and whose aggressive behaviour peaks during adolescence (Fergusson, Horwood, & Nagin, 2000; Nagin & Tremblay, 1999) (for reviews refer to Moffitt, 2007; and Nagin & Tremblay, 2005). Most findings are based on samples that include males only. Studies that include girls find that although they are far less likely than boys to be in a chronically delinquent group or to be physically aggressive, the course of behaviour and associated etiology of the various trajectory groups is similar in both genders (Fergusson & Horwood, 2002; Maughan, et al., 2000; Moffitt & Caspi, 2001; Odgers, et al., 2008).

Recently, Pepler and colleagues (2008) applied trajectory analysis to the development of school bullying from age 10 to 17 in a sample of 871 Canadian males and females. The measure of bullying used was a two-item adaptation of Olweus' broad self-report measure. Four distinct trajectory groups were identified: a high bullying group (10% of the sample) who engaged in consistently high levels of bullying, peaking around age 14; a moderate group (35%) who reported consistently moderate levels of bullying over time; a desisting group (13%) whose bullying was as frequent as the high group at age 10, but declined up to age 14 and was almost nonexistent by 17; and a never bully group (42%), who reported almost no bullying. Males were more likely to be members of the high and moderate groups, but there were no gender differences for the desisting group. These findings are significant for two reasons. First, they showed that it was possible, based on a commonly utilised, general measure of bullying, to identify developmental trajectory groups that closely resembled trajectories of problem

behaviour in the broader literature. In particular, they confirm the presence of a small group of young people who report persistent bullying at a much higher rate than the rest of the sample. Second, they showed that the trajectory groups were differentially associated with levels of self-reported physical aggression. Individuals who were on the high and moderate trajectories consistently reported more physical aggression from 14 to 17 than the never bully group, and aggression within the high group was significantly greater than within the moderate group. While this study did not report a young adulthood follow-up, the results support the possibility that ‘life-course persistent’ bullies were already physically aggressive young people during their school years.

While studies have mostly confirmed Moffitt’s distinction between various trajectories of offenders, findings regarding expected desistance have been more varied. Specifically, the ‘adolescence-limited’ offenders are not always shown to desist as expected in early adulthood. Nagin, Farrington and Moffitt (1995) tested for the presence of the taxonomy using data from the Cambridge longitudinal study of 411 working class London men (Farrington & West, 1981). Offending trajectories from age 10 to 32 were examined. Overall, the existence of life-course persistent and adolescence-limited offender groups was confirmed. Three offending trajectory groups were identified, including a high-level chronic group, another that peaked sharply in adolescence, and a group who offended chronically, but at a low level. During adolescence, the problem behaviour (including violence) of the high-level chronic group and the adolescence-limited group was similar. By the age of 32 official convictions for the adolescence-limited group had declined considerably, but according to self-reports they continued to get into fights, drink heavily, and use illicit drugs. These self-reported levels were indistinguishable from those reported by members of the high-level chronic group.

Moffitt's follow up of the Dunedin males at age 26 revealed some similar patterns (Moffitt, et al., 2002). Both the life-course persistent and adolescence-limited men were significantly more likely than non-offending groups to have official convictions for violence, to self-report violent offences, and to get into fights, although the amount of violence reported by the life-course persistent men was much greater than that of the adolescence-limited men. For example, the life-course persistent men were the only group likely to be violent towards women and children in the home. However, the adolescence-limited men accounted for twice their share of the cohort's property and drug convictions, and continued to abuse alcohol and drugs. Moffitt suggested two reasons why the adolescence-limited men had not reformed as much as expected by the age of 26. The first was that these men were still inside the maturity gap that is assumed to promote offending during adolescence. Due to broad economic, demographic and labour market shifts during the latter part of the 20th century, the age at which young people are able to make the sorts of 'settling down' commitments that traditionally signal the onset of adulthood has been significantly delayed. There is growing consensus amongst researchers that the starting point for true adulthood now begins at the earliest after the age of 25. Arnett (2000) coined the term 'emerging adulthood' to describe the years of relatively roleless exploration in between attainment of biological adulthood and social adulthood. Moffitt proposed that the adolescence-limited men had yet to encounter the adult roles and privileges that would facilitate desistance.

The second explanation for the adolescent group's continued problem behaviour was that they had become entangled in 'snares', or harmful turning point experiences, that actively retarded the process of normative desistance. Snares may include disadvantages that accrue from offending during adolescence, such as court records and truncated educational qualifications that in turn hamper early adult employment opportunities. However, Moffitt also uses the term to describe factors such as substance

use, that tend to exert short-term, proximal effects on offending. The significance of the emerging adulthood transition and the concept of snares as they apply to the bullying – aggression connection will be revisited in Chapter 2. The main point here is that, whatever the explanation for desistance in early adulthood, it appears that adolescence-limited offending is not ‘benign’ and it is possible that any aggression during adolescence (even in the absence of aggression during childhood) may increase the chances of early adult aggression.

e) Context matters: proximal influences on aggression in early adulthood

The proximal effect of snares relates to a topic that has been addressed less often in research into developmental trajectories of antisocial behaviour: the roles of concurrent life experiences and situational factors in accounting for variation in behaviour *within* trajectory groups, particularly within the life-course persistent group. As discussed, Moffitt’s original theory predicted that life-course persistent individuals would be unlikely to desist from offending in early adulthood because the cumulative effect of their behavioural history and cognitive deficits would limit their capacity to encounter, or take advantage of turning point opportunities. However, research on desistance suggests that some young people who were persistently antisocial children and adolescents do manage to take advantage of employment, educational, and social opportunities during the early adult years and turn their lives around (Loeber, Pardini, Stouthamer-Loeber, & Raine, 2007; Roisman, Aguilar, & Egeland, 2004; Stouthamer-Loeber, et al., 2004).

Sampson and Laub (Sampson & Laub, 2005a; Sampson & Laub, 1993), in particular, emphasise the potential for increased social control stemming from adult life events to promote desistance even for highly antisocial individuals. Their follow-up of 500 delinquent boys from Glueck and Glueck’s longitudinal study (1940–1965) showed that positive life events like making a good marriage and gaining stable employment

were associated with reduced antisocial behaviour. It was further found that these divergent pathways could not be predicted from early measures of childhood risk. Based on these findings, the authors argued that adult life events are better predictors of desistance or persistence in offending than early risk factors. Although this conclusion has been much debated (for example, Moffitt, 2007) the broader implication is that there is significant heterogeneity in the course of antisocial behaviour after adolescence and that concurrent life events play a role in this variation.

Another set of contemporaneous influences that are especially pertinent to acts of aggression and violence are situational factors. While some people are much more prone to be violent than others, factors in the immediate environment translate the propensity for violence into the specific instance. The physical and social features of the environment influence perceptions of whether an act is possible, acceptable or rewarding in a particular setting, and affect perceptions of other people's behaviour in that setting. According to routine activities theory (Cohen & Felson, 1979), the minimum requirement for the occurrence of a predatory crime is the convergence in time and space of three elements: a motivated offender, a suitable target, and the absence of a capable guardian. Bullying in school and many acts of adult aggression would not be regarded as criminal predatory acts. Nevertheless, they are still interactions between victims and offenders in specific situations, and some settings are more conducive to violence than others. For instance, violence is more likely to occur in settings where people are intoxicated, in both general and high-risk populations (Felson, Savolainen, Aaltonen, & Moustgaard, 2008; Parker & Williams, 2003). Farrington (2007b) reports that many of the boys in the Cambridge Study became involved in fights after they had been drinking, and Dave and Ben's story at the start of this chapter illustrates how alcohol may precipitate and escalate incidents of violence.

More broadly, the social norms that operate in a given context can contribute to what people perceive as legitimate behaviour in that setting. The link between association with delinquent peers and adolescents' aggressive behaviour, for instance, is well documented (Vitaro, Boivin, & Tremblay, 2007), and studies have begun to examine the role of the peer group and classroom dynamics in supporting school bullying. Salmivalli, Lappalainen and Lagerspetz (1998) investigated the stability of bullying in a sample of Finnish students between grade 6 and grade 8. Although there was moderate stability over this two-year period, for girls the *current* level of bullying amongst peers was a better predictor of grade 8 bullying than their own former behaviour. Stability coefficients were also stronger for students who stayed with the same class group between the two grades, rather than those who moved to new classes. Such findings suggest that changes in institutional settings may be accompanied by shifts in the situational factors and normative influences that are supportive, or not, of aggression.

Continuity and discontinuity in aggression from childhood to early adulthood:

Summary

The reviewed findings from longitudinal research on aggression and bullying may be summarised as follows. The evidence clearly shows that there is continuity from early aggression to later aggression, and that there are persistent individual differences in aggression from childhood to early adulthood. However, significant heterogeneity exists within the population in patterns of continuity and change. Within any cohort, there are likely to be distinct subgroups of individuals who display differently shaped trajectories of aggressive behaviour during childhood and adolescence, and these manifest in different levels of early adult aggression. In general, findings support a distinction between individuals who persistently display relatively high levels of aggression from early childhood onwards, and those whose aggression appears to have

an onset at adolescence. The available evidence suggests that analogous adolescent-onset and persistent trajectory groups may be identified in longitudinal studies of school bullying.

Persistently aggressive adolescents are most likely to become highly aggressive young adults. Overall, however, evidence supports a general decline in problem behaviour, including overt physical aggression, during early adulthood. Decreases seem to be associated with positive life events that promote the formation of social bonds inconsistent with problem behaviour, while becoming caught up in 'snares' such as excessive substance use can delay this decline.

Early in life factors are important: childhood-onset aggression consistently predicts more severe and frequent violence in adolescence and adulthood. Other childhood factors are also implicated. For instance, Moffitt emphasises the role of early neuropsychological deficits in the etiology of life-course persistent problem behaviour. Early risk is significant because it can set in motion a lasting chain effect, in which cumulative cycles of negative experiences (for example, school exclusion, delinquency, early parenthood) result in poor life outcomes, decreasing the chances that aggressive youth will encounter positive adult life events, or have developed the capacity to benefit from them. However, there is also considerable variation in patterns of continuity and change during adulthood, even amongst high-risk groups. Some researchers emphasise state dependence, suggesting that variation during adulthood is best accounted for by proximal life events and situational factors. Furthermore, these factors may not always be predictable from measures of early childhood risk.

Thus, findings indicate that the past (early factors) is important, the present matters (situational factors, early adult life events), and that the effects of the present may be shaped by the experiences of the past. These conclusions suggest two related

issues to be considered in the present investigation of relationship between childhood bullying and adult physical aggression.

First, will continuity and discontinuity in aggression during early adulthood be better accounted for by adult drinking and work/study experiences on the one hand, or by earlier measures of bullying on the other? Based on the evidence, it is reasonable to assume that bullying in school, especially bullying that is severe and persistent, is likely to increase the chances of adult aggression. However, the evidence also suggests that experiences occurring *after* the school years might account for some variation in aggressive pathways. Under what adult conditions will individual differences in bullying during childhood and adolescence lead to physical aggression in the new environments of early adulthood? Furthermore, how might the effects of proximal adult experiences differ between adolescent-onset and persistent bully trajectory groups?

Second, what sort of individual or contextual factors might mediate continuity and change in aggression from childhood to adulthood? While school bullying seems likely to predict later adult aggression, bullying is also linked to deficiencies like underregulation of behaviour and emotion and other difficulties like poor school adjustment. How might these factors, either alone or by interaction with bullying, lead to adult experiences and behaviour?

Addressing these questions necessitates the tracking of continuity and discontinuity of behaviour across both time and changing institutional contexts. This task requires a theoretical framework that allows one to ‘think outside the school box’ by making links between context, experience, and individual behaviour across time. The present study draws on concepts and models associated with developmental systems theories (Ford & Lerner, 1992; Sameroff, 2000a). These approaches offer a broad framework and a range of tools for exploring the dynamics of constancy and change over the course of people’s lives. Given the complexity of human development, the

overall framework includes various theoretical strands, such as developmental contextualism (Lerner, 1991), life-course developmental theories (Baltes, 1987), and transactional models (Sameroff, 1989; Sameroff & MacKenzie, 2003). Although the individual strands differ somewhat in history and emphasis, the broader perspective is characterised by a number of shared beliefs about critical issues in the study of development, such as the importance of contextual influences, processes of change, and cultural and historical embeddedness. All these concerns revolve around the basic principle that people can never be fully understood in isolation from the multiple contexts of their lives. Overall, systems theories emphasise the possibility of behavioural change throughout the lifespan and propose that continuity is upheld through ongoing processes of dynamic interplay between active people and changing contexts (Sameroff, 2000b).

The following section presents a brief summary of some of the main features and points of emphasis within systems theories. Specifically, I highlight the idea of (a) person-context relations, (b) the concept of plasticity in development, and (c) the role of developmental transitions in understanding processes of continuity and change. Following this, I draw on these key concepts to set out the research questions and describe the research model that guides the current study.

3. A developmental systems framework

a) People in context

The starting point for developmental systems theories is the inseparability of people and context. Human life is understood as a fused ecological system involving variables and processes at multiple levels of organisation. These levels of organisation range from the inner biological, involving genetic structures and biological processes; to the psychological, involving psycho-behavioural processes; the proximal social,

including family and peer groups; and the sociocultural, including institutions such as the education system and government agencies. Levels of organisation are structurally fused, which means that variables at different levels exist in relationship with variables from other levels. Each individual is viewed as embedded within a network of relationships with people and environments that are in turn embedded in their own multilevel networks.

Variables at all levels have the potential to influence individual behaviour and development. Biological processes, for example, contribute to physical characteristics such as height and body weight, and interpersonal processes such as parenting practices have an effect on children's social development (Collins, Maccoby, Steinberg, Hetherington, & Bornstein, 2000). Simply broadening the perspective to include the possibility of multiple influences on individual development is not enough, however, to give a complete picture of how contextual factors operate. Since variables at different levels of organisation are defined in relation to variables at other levels, so too is the function of variables shaped by these relationships. The influence of any variable on a particular developmental outcome can only be understood in the light of its relationship to other elements in the person's developmental systems (Baltes, 1987; Sameroff & MacKenzie, 2003). An example of how multi-level influences relate to each other is provided by Conger and colleagues' (2002) application of the family stress model of economic hardship to a population of African American families with school-aged children. The model proposes that the effect of economic hardship on child adjustment operates through a series of mediated relationships involving perceived economic pressure, caregiver emotional state, conflict between caregivers, and parenting practices. The results generally supported the model. Specifically, the chain of influence leading to child adjustment was shown to begin with a positive relationship between economic hardship and economic pressure, which led to caregivers' depressed mood, and, in turn,

increased conflict between caregivers. Caregiver conflict was subsequently indirectly linked to child externalising and internalising problems by way of low nurturant-involved parenting. This mediated process demonstrates how wider economic factors influence child development by the way they affect processes at the immediate family level.

Within developmental systems theories, the impact of contextual factors is not independent of a person's individual characteristics. People do not passively respond to environmental experience, but are active agents whose personal characteristics shape this experience. Individual behaviour is not the product of personal characteristics alone, or environmental experience alone, but of the combination of the two. This combination exists as continuous, dynamic transactions between individual and environment, in which people affect their context just as context affects them (Sameroff, 2003).

Caspi (2000) describes three types of person-environment transactions. *Reactive* transactions occur because different people respond to similar environments in different ways. For example, aggressive children are inclined to attend selectively to hostile cues and interpret others' intentions as hostile, increasing the likelihood of aggressive responding (Crick & Dodge, 1994). *Evocative* transactions describe the way in which people's unique characteristics and behaviour tend to evoke different responses from others in the environment. For example, the behaviour of aggressive children tends to elicit negative responses from others. This may lead to such children becoming labelled as 'bullies' or 'troublemakers'. This increases the chances that key adults, like teachers and parents, will come to expect aggressive behaviour from that child and direct punitive aggression towards them, which further reinforces the original problem behaviour (Dodge & Pettit, 2003). Finally, *proactive* transactions occur because people actively select environments that suit them. For instance, people choose to spend time

with friends who share similar interests and experiences and who respond to the environment in similar ways. Such selection processes mean that behaviour and characteristics are further reinforced by the environment (McLeod & Almazan, 2003).

b) Developmental change and behavioural variability

In the discussion of findings from longitudinal studies of antisocial behaviour, I identified the broad distinction between early in life vs. proximal explanations of behavioural trajectories as an issue that is debated within the field. Some explanatory models of offending and antisocial behaviour are characterised by a focus on strong individual coherence across life periods, in which distal experiences are shown to make substantial contributions to later outcomes (for example Caspi, 2000). Others ascribe equal, if not greater, significance to proximal rather than distal factors as determinants of behaviour (for example, Sampson & Laub, 1993).

The distinction between these interpretations reflects two broad ways to describe development, one emphasising the predictive significance of the early years in life, and the other taking account of events throughout the life span (Goodnow, 2007). While many studies confirm the lasting significance of early positive or negative experience, this can imply that an individual's particular developmental trajectory is 'locked in' by primary school at the latest, with subsequent functioning largely constrained by these early causal factors. One of the main criticisms levelled at this view of development is that it can lead to an interpretation of the life-course as pre-programmed, an 'inevitable unfolding . . . of what is fundamentally 'already there' (Sampson & Laub, 2005b, p. 39).

Systems theories, in contrast, contend that change is a constant and necessary feature of human development (Lerner & Castellino, 2002). This occurs as a result of the integration and fusion that exists amongst levels of development. As, ultimately, history is also a level in the developmental system (Elder, Johnson, & Crosnoe, 2003), all its constituent parts exist in relation with time. Change is thus an inevitable

consequence for all levels of organisation, at the level of the individual as well as his or her multiple contexts. In other words, individual development is characterised by the potential for plasticity, or the likelihood that changes in behaviour will occur in relation to changes in the environment (Jelicic, Theokas, Phelps, & Lerner, 2007). From this perspective, the development of aggressive behaviour would not be rigidly pre-ordained by earlier factors, but be open-ended and responsive to changing conditions and experiences, either for better or for worse. Sampson and Laub's (1993) findings regarding the link between marriage and desistance from crime, for example, provide an illustration of the relationship between changes in context and individual plasticity. One implication of the inevitability of change is that, depending on the different environments that a person encounters over time, there are multiple possible pathways through life (Baltes, 1987).

This view does not mean that the roles of early experience and personality should be disregarded. Plasticity is not limitless. People's behaviour at any point in time is always influenced by their past experiences, individual skills and the conditions of the current setting. The combination of early regulatory deficits and family adversity, for example, can set in motion cumulative cycles of disadvantage throughout childhood and adolescence that serve to limit educational and occupational outcomes in young adulthood (Fergusson & Horwood, 1998). Moffitt (2002) argued that the transition to adulthood had failed to generate turning point effects for the life-course persistent men in the Dunedin Study because their antisocial history decreased the likelihood that they would encounter opportunities to form the sorts of positive social bonds that could facilitate adaptive person-context relations.

An emphasis on plasticity suggests that the impact of early experiences needs to be understood in terms of the processes by which they lead to later outcomes. From this perspective, such processes are found in the dynamic interactions between developing

people with changing environments over time (Sameroff, 2000a; Sameroff & MacKenzie, 2003). As I discuss in more detail shortly, developmental transitions are a good ‘vantage point’ from which to observe such processes of continuity and discontinuity, because they tend to coincide with major changes in social and institutional settings (Lawrence, 2007). Broadly, transitions are times at which the way a person relates to, or ‘fits’, within his or her environment can be significantly altered, with important effects on the course of behaviour.

c) A focus on processes of change at times of developmental transition

Major life periods—childhood, adolescence, old age—tend to be broadly linked with different social contexts, roles and institutions, and these in turn are associated with particular developmental tasks and experiences. Adolescence, for example, is closely linked with the educational institution of high school and associated developmental tasks like learning to complete set tasks independently. The transition into marriage is traditionally associated with young adulthood, with the related task of finding a suitable partner.

Developmental transitions are the ‘way stations, milestones or social markers’ that divide up these periods of the life course (Lawrence, 2007, p. 35). While individually significant developmental changes can occur at any time, such ‘global’ transitions are externally defined by movement between primary social institutions (Rutter, 1996). The transition to adulthood, for instance, involves movement from institutions of education to institutions of employment. Systems theories emphasise the importance of developmental transitions for understanding continuity and discontinuity in behaviour over time. This is because shifts in social and institutional settings bring new challenges, new opportunities, and new risks. Reduced parental supervision at puberty, for example, increases freedom to roam in public space, while the young adult move to the workplace imposes its own demands and responsibilities (Steinberg &

Morris, 2001). The nature of these challenges, as well as the degree to which individuals are equipped to cope with them, can interact to result in both continuity and discontinuity in functioning.

In many cases, person-context relations at transition points will result in continuity in functioning, be it adaptive or maladaptive. People arrive at transitions differentially equipped with social and psychological skills and resources. The extent to which these are adequate or appropriate for coping with the challenges of the transition can act to exacerbate individual differences in ongoing trajectories of behaviour.

Schulenberg, Maggs and O'Malley (2003) describe this process as *increased heterogeneity*. School bullies, for example, often have difficulties regulating their behaviour and emotions, which contribute to the development of cognitive 'schemas' that promote aggressive responding across a variety of settings (Crick & Dodge, 1999). At times of transition, these deficiencies may increase the chances that the aggressive strategies that characterise peer-to-peer bullying will generalise to new settings and relationships. In a cross-sectional study of Canadian young adolescents, Connolly (2000) found that students who reported bullying at school were more likely than non-bullies to report being physically and socially aggressive towards their boyfriends and girlfriends. Connolly argued that the adolescents who bullied their peers had become accustomed to using aggression to assert power and control over others and that these interactional patterns were transferred to dating relationships that began to emerge around puberty. Later in life, young people who enter the workforce equipped with only confrontational ways of dealing with authority will be more likely to have negative workplace experiences, and have more difficulties obtaining and maintaining good quality jobs (Roberts, Harms, Caspi, & Moffitt, 2007).

Transitions may also serve to decrease or increase the 'match' between a person's psychological needs and the resources available in the environment,

amplifying the effects of prior functioning on behaviour (Eccles, et al., 1993). For instance, if the primary school environment has failed to meet the needs of a poorly behaved boy struggling with reading skills, and the new high school environment proves to be similarly unsupportive, it is likely that his academic performance and behaviour will continue to worsen. Researchers identify the prolonged period of relatively unstructured exploration and freedom that characterises the 21st century transition to adulthood as a time at which the life-long socio-emotional consequences of a poor person-environment match are especially amplified (Masten, Obradović, & Burt, 2006; Schulenberg, Bryant, & O'Malley, 2004). For young people who have adequate individual and social resources to draw upon, post-high school freedom will likely provide developmentally appropriate challenges that can be turned into opportunities for continued competent functioning. Those who are poorly equipped to cope with a lack of institutional structure, however, are at risk of becoming trapped in the 'roleless floundering' that Moffitt et al. (2002) suggested had hindered the desistance of the adolescence-limited offenders in the Dunedin study. In both cases, the distal effects of child and adolescent patterns of behaviour on later adjustment are mediated by the early adult transition (Schulenberg, et al., 2003).

Transitions also expose young people to new risks that can impede subsequent successful development. For example, reduced parental supervision in adolescence increases opportunities for teenagers to become involved in delinquent behaviour, while in early adulthood relatively normative experiences like getting drunk with friends may, for some people, be risky (Aseltine Jr. & Gore, 2005). Once again, those with a history of problem behaviour are most likely to encounter these harmful turning point experiences, as well as suffer adversely as a result. For example, child externalising behaviours are predictive of more frequent substance use during adolescence (Hawkins, Catalano, & Miller, 1992), and it is possible that this usage contributes to continued

problem behaviour and delinquency in early adulthood (Zucker, 2008). As noted earlier, Moffitt (Hussong, Curran, Moffitt, Caspi, & Carrig, 2004; 2002) refers to substance use as a ‘snare’ that can entrench at-risk young adults within antisocial patterns of behaviour, further reducing the likelihood of encountering positive life events such as good quality employment.

These continuity effects could be interpreted as extensions of a ‘destiny’ view of development, in which transitions serve mostly to consolidate or accentuate pre-existing characteristics. Those who were doing poorly before a transition continue to do poorly; while those who were doing well continue to do well. Developmental systems approaches, however, emphasise the probabilistic rather than deterministic nature of development. As pointed out by Schulenberg and Maggs (2008), the word ‘destiny’ can describe pre-ordained fate, emphasising the effects of earlier trajectories of functioning for young adult outcomes, but it can also refer to luck, random events and unexpected opportunities, emphasising the impact of sudden changes in social and institutional context. Thus, transitions may also bring about discontinuity. For example, a child who has struggled academically in primary school may be lucky enough to encounter a supportive teacher in the first year of high school, and begin to experience academic competence. On the other hand, if a transition brings about a markedly *worse* person-environment match, or if changes overload a person’s coping capacities, the benefits of prior positive functioning may be insufficient to prevent poor outcomes (Schulenberg, et al., 2003).

As noted earlier, the literature on desistance from offending stresses the importance of adult life transitions such as employment and marriage as ‘turning points’ that help people to direct their lives away from crime. Rutter et al. (2006) identify several core characteristics of such turning point events, including chances to form new supportive relationships, a clear separation from past environments, increased informal

social control, structured activities, and opportunities for identity formation.

Importantly, some evidence suggests that these experiences are not predictable from measures of childhood risk (Laub & Sampson, 2001; Laub, Nagin, & Sampson, 1998).

Turning point events in early adulthood may also operate with regard to problem behaviour that has not come to official attention. Aseltine and Gore (1993) followed a multi-cohort sample of Boston youth over a two year period, during which time the oldest cohort graduated from high school. For these youth, the transition out of high school was associated with significantly lower levels of depression and delinquency. Furthermore, earlier measures of adjustment were more strongly linked with outcomes for those who were still in school at the follow-up, compared with those who had graduated. It was argued that the fundamental changes in education and work settings following high school graduation allowed youth to leave behind years of accumulated negative experiences in this arena, and make a ‘fresh start.’

In summary, different features of developmental transitions have different effects for different people. For some people, a transition might contribute to continuity, in the shape of continued positive or negative functioning. For others, it might contribute to developmental discontinuity, enabling some people to escape from problematic patterns of behaviour. Alternatively, transition experiences might contribute to the onset of difficulties amongst previously well functioning individuals. Which of this diversity of possible outcomes is observed in a particular situation depends on complex interactions between individuals’ past experiences, current contexts, and their past and current social, material and personal resources.

4. Research model

Previous research in child development and aggression suggests that the consequences of school bullying for adult physical aggression are dependent on

complex links between people, experiences, relationships and social and institutional settings. This study explores longitudinal pathways from bullying during school to physical aggression in early adulthood. I consider how individual and contextual factors shape pathways during the school years and contribute to adult aggression, as well as how circumstances and experiences during early adulthood are associated with different outcomes.

These pathways are explored against the backdrop of evidence showing that processes underlying continuity and discontinuity in aggression may be quite different for subgroups of individuals whose patterns of aggressive behaviour take different developmental trajectories over time. Following examples set in this literature, I divide the sample into four bully trajectory groups based on self-reported bullying in primary school (Time 1) and high school (Time 2): (1) a *non-bully* group, including participants who did not report bullying in either primary school or high school, (2) a *child-limited* bully group, consisting of participants who reported bullying in primary school only, (3) an *adolescent-onset* bully group, including those who first reported bullying during high school, and (4) a *persistent* bully group, including participants who reported bullying during both primary school and high school.

Figure 1.1 is a heuristic model of the variables in the study and the possible relationships between them. The ovals in the lower sections of the figure contain measures of aggressive behaviour at each of the three waves of the study: bullying in primary school (Time 1) and high school (Time 2) and emerging adulthood (Time 3). The box in the upper right-hand section at Time 3 contains two emerging adult ‘transition experiences’: institutional role and drinking. These variables were selected to capture two very limited aspects of the social and institutional changes that occur during the transition to adulthood. Institutional role is a dichotomous variable that reflects the predominant pattern of work vs. study during emerging adulthood. Specifically, it

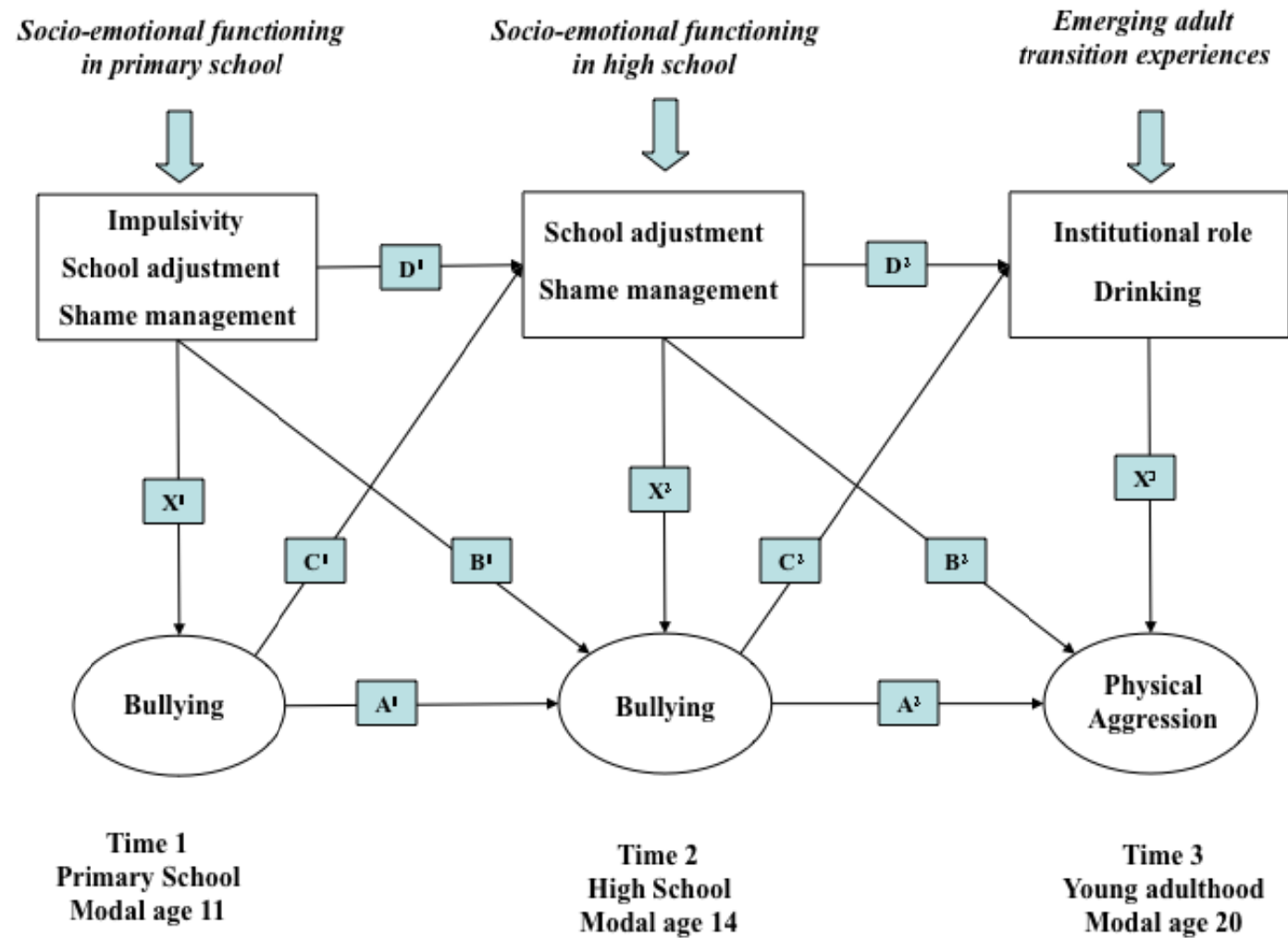


Figure 1.1: Heuristic model of variables in the study and relationships between them

indicates whether a participant was primarily engaged in university study by the Time 3 assessment, or was primarily engaged in the labour market. Drinking is a continuous measure of frequency of alcohol consumption. Theory and empirical evidence relating to the role of these factors in continuity of aggression will be discussed in detail in Chapter 2.

The boxes in the upper section at Times 1 and 2 contain measures of socio-emotional functioning that are expected to account for differences in bullying during primary school and high school, and that may also predict aggression in early adulthood. These include school adjustment, impulsivity (at Time 1 only) and shame management, which is an aspect of emotion regulation. These constructs and their relationship to bullying will be discussed in Chapter 3.

The *X* paths represent cross-sectional associations between proximal predictors and behaviour at each developmental period, while the *A*, *B*, *C*, and *D* paths represent longitudinal relationships. In the interests of reducing clutter, note that arrows directly linking variables measured at Time 1 with Time 3 factors are not shown, nor are demographic variables (sex and parental education). However, the analyses control for these demographic variables and are designed to consider direct Time 1 to Time 3 paths.

The evidence reviewed in this chapter relating to continuity and discontinuity in aggressive behaviour highlighted a tension between explanations of adult behaviour that focus mostly on the effects of past behaviour and other distal risk factors, and explanations that focus, on the other hand, on variation in adult aggression that is attributable to proximal events and circumstances.

A model emphasising the first mechanism, the influence of the past, would predict that continuities in aggression during the transition to adulthood would be mainly rooted in earlier experiences. Thus, variables measured early in the pathways

depicted by Figure 1.1 would be stronger determinants of early adult aggression than later, proximal factors. In other words, individual differences in aggression during emerging adulthood would be largely predictable from different patterns of bullying and socio-emotional functioning that were apparent during the school years, regardless of early adult drinking and institutional role. This situation is represented by the *A* and *B* paths in Figure 1.1. The first goal of this study is to assess the predictive power of these paths. To what extent do bullying and socio-emotional functioning at school predict aggression during early adulthood?

Developmental systems approaches emphasise the notion of plasticity, that changes in behaviour are likely to occur in relation to changes in the environment. From this perspective, adult aggressive behaviour would not necessarily be determined by earlier behaviour and experiences. Thus, adult drinking and institutional role might account for variance in aggression over and above the distal effects from bullying and socio-emotional functioning measured at Times 1 and 2. Indeed, some findings show that the influence of developmental distal processes on adult aggression may be modified, or even reversed, by different experiences occurring after high school. Experiences during the transition to adulthood can act as turning points that operate to fundamentally change the direction of an individual's pathway—for better or for worse. However, these outcomes may differ in important ways depending on developmental history of aggressive behaviour. For instance, Moffitt proposes that adolescent-onset delinquents will be more likely than life-course persistent delinquents to be turned around by positive life experiences during the transition to adulthood (Moffitt, et al., 2002). Moreover, young people who arrive at the transition to adulthood unburdened by any history of aggression may be unlikely to suddenly become very aggressive, regardless of positive or negative circumstances in the post-high school years.

The second goal of this study is to test these possibilities. Do drinking and institutional role have any additional effect on adult aggression? If so, are such effects additive (applying to the whole sample equally) or interactive with bully trajectory group (applying in different ways to different subgroups of former bullies)? In Chapter 2 I review evidence relating to the impact of drinking and work/study experiences during the transition to adulthood for continuity and discontinuity in aggression from childhood.

This first set of questions relates to the direct effects of distal vs. proximal influences on adult aggression, and clearly arises from the literature reviewed in the current chapter. However, developmental studies point to the existence of multiple pathways to aggressive behaviour, in which the significance of specific variables for predicting aggression may wax and wane at different developmental periods, or exert their influence indirectly via other variables. For instance, an individual's past development, as well as the nature of current conditions, may act to promote or constrain plasticity at times of developmental transition (Lerner & Overton, 2008 899). The discussion of processes of continuity and discontinuity at transition points suggested that, through a series of ongoing, mutually influential person-environment interactions, people actively select themselves into different roles and activities, based on their individual characteristics, developmental history, and social and material resources. Once selected, different environments and associated experiences will in turn make further contributions to functioning.

This implies that, despite the diversity of new options available during emerging adulthood, the directions taken after high school by the participants in the present study will mostly not be taken at random. Thus, any effects associated with drinking and institutional role (the X^3 path) would not operate independently of bullying and socio-

emotional functioning measured at Times 1 and 2. The *C* and *D* paths illustrate various ways in which the past and the present might interact to explain Time 3 aggression.

This raises a second set of questions to be addressed in the present study. First, what are the mediated longitudinal pathways linking school bullying with adult aggression? To what extent are the effects of drinking and institutional role shaped by the experiences of the past? For instance, are persistent bullies likely to drink more frequently during emerging adulthood?

Second, are these mediated pathways from childhood the same or different across the four bully trajectory groups? If the effect of adult transition experiences differs amongst different bully trajectory groups, might the entire chain of events linking distal measures of functioning with adult outcomes also differ amongst these groups? The background to these questions will be further elaborated in Chapter 3.

Chapter summary

This chapter has reviewed evidence relating to continuity of aggressive behaviour from childhood to adulthood. The first section defined and discussed the nature of aggression and bullying. It was suggested that bullying is best considered as one element of a broader aggressive and externalising construct, which might manifest in aggressive responding across a variety of school and non-school settings.

In the second section I reviewed empirical evidence for continuity and discontinuity in aggression and antisocial behaviour from childhood to adulthood. Broad patterns of stability and change were discussed, with a particular focus on research into distinctive developmental trajectories of behaviour amongst different subgroups in the population. At the end of this section I identified key implications of the findings for researching the relationship between bullying and aggression,

particularly the issue of whether continuity in such behaviour would best be explained by early risk or later experiences.

The third section introduced a developmental systems theoretical framework to help apply findings from the longitudinal study of antisocial behaviour to the current investigation of linkages between school bullying and early adult physical aggression. Finally, I drew on these concepts to present the model designed to guide the current study, outlining mechanisms by which drinking and work/study experiences during the transition to adulthood might affect the developmental course of aggressive behaviour from childhood.

Chapters 2 and 3 work flesh out the pathways and constructs shown in Figure 1.1. I work backwards in time, beginning with the emerging adulthood end of the model. Chapter 2 is focused on a discussion of emerging adulthood. It reviews theory and evidence regarding the effects of drinking and work and study transitions in the post-high school years for continuity and discontinuity in aggressive behaviour. The aim is to consider what the evidence suggests about significance of drinking and study/work status (the X^3 path) for the bullying – aggression connection (the A^1 and A^2 paths).

Chapter 3 reviews evidence for factors that potentially mediate continuity and change in aggression from childhood to adulthood. This involves taking a step back to the school years to describe relationships between socio-emotional functioning and bullying during school. The overall aim of the chapter is to highlight the multiple possible adaptive and maladaptive pathways from bullying in childhood to adult aggression. I describe shame management theory, the relevance of school adjustment, and how these factors are associated with continuity in bullying over the primary school to high school transition. Drawing on wider developmental research, I propose various pathways by which these factors may combine to predict adult aggression. In the final

section of Chapter 3 I summarise the argument running through the opening chapters to present a fuller specification of the research questions addressed in this study.

CHAPTER 2:

STUDY, WORK, AND DRINKING: TURNING POINTS AND SNARES IN AGGRESSIVE PATHWAYS AT THE TRANSITION TO EARLY ADULTHOOD

Developmental researchers increasingly agree that the years between 18 and 25 represent a distinct phase of the life course for youth in the western industrialised world. First coined ‘emerging adulthood’ by Arnett (2000), this period falls after adolescence and the end of secondary school, but precedes true adulthood. These years are characterised by exploration, frequent changes in love and work, and instability, as young people try out different life pathways and opportunities. According to theorists, this new life stage has been created to accommodate broad changes in the nature of work and education that resulted from rapid demographic, sociocultural and economic shifts that took place in industrialised nations during the latter part of the 20th century. The labour market shift towards knowledge work has resulted in an extension of the period of formal education for young people, as well as substantial increases in the proportion of school-leavers who undertake tertiary study and training. This has been accompanied by postponement of entry into full-time, career trajectory employment. In turn, the markers of true adult status, such as marriage, financial independence, and parenthood, are now achieved five to ten years later than they were in the mid-20th century (Arnett, 2004; Côté, 2006; Eccles, Templeton, Barber, & Stone, 2003; Hamilton & Hamilton, 2006).

Despite the lengthening span of adult transitions, there is little evidence that the prevalence of problem behaviours traditionally associated with adolescence have also extended into the emerging adulthood period (Hayford & Furstenberg, 2008). As discussed in Chapter 1, the population-level trajectory of aggressive and antisocial behaviour declines during the post-adolescence years (Brame, et al., 2001; Loeber & Hay, 1997). Hussong and colleagues (2004) refer to this pattern as ‘emerging

desistance’, and suggest that, overall, desistance from antisocial behaviour is developmentally normative during the early adult years. However, the longitudinal evidence reviewed in Chapter 1 also showed that there is significant heterogeneity in patterns of continuity and change in aggression during adulthood, even amongst the high risk group who are persistently aggressive across childhood and adolescence. Systems theorists emphasise the importance of developmental transitions for understanding different patterns of continuity and discontinuity in functioning. Normative transitions are viewed as ‘switch points’ at which the course of aggressive behaviour can be altered for better or worse. Consistent with this perspective, longitudinal studies in criminal offending suggest that experiences occurring *after* the end of high school, during the transition to adulthood, might account for some variation in the relationship between childhood aggression and adult aggression. This chapter discusses theoretical and empirical evidence for the significance of drinking and participation in work and higher education for continuity and discontinuity in the developmental course of aggressive behaviour from childhood.

The emerging adulthood life phase

In the years after leaving school, people must make decisions about study, labour market entry, moving out of home, and forming long-term intimate partnerships. Schulenberg, Sameroff and Cicchetti (2004) argue that the contemporary transition to adulthood is one of the most critical of the normative life transitions because it ‘typically involves pervasive and often simultaneous contextual and social role changes’ (p. 799). These role changes entail renegotiations of existing relationships with parents and friends, the formation of new ties with employers, workmates, teachers, romantic partners and peer groups, and adaptation to new and demanding social and institutional settings. The pathways that people take through this period are diverse, complex, and

often move in unpredictable directions. It is common at this age, for example, to combine work and study, change course of study and job several times, enter and leave several romantic relationships, or take time out to travel. This prolonged period of exploration is marked by a distinct lack of institutional structure and control (Hurrelman, 1990; White & Wyn, 2004). The regulatory influence of earlier family and school structures declines, but most people have yet to enter the more structured and formal social institutions of marriage, parenthood, and long-term employment that place more constraints on choices and behaviour. As a consequence, emerging adults are granted a period of unprecedented personal flexibility and freedom of choice in day-to-day life and social activities.

Many writers have taken this lack of normative guidance from social institutions as the starting point to describe emerging adulthood as the time at which people must ‘self-socialise’ (Heinz, 2002) or ‘learn to stand alone’ (Arnett, 1998). According to systems theories, however, people’s development occurs in relation to the multiple contexts of their lives. Individuals are embedded within networks of relationships with other similarly embedded people and settings, and variables at all levels of this fused ecological system affect each other via continuous, dynamic transactions (Lerner, 2002). From this perspective individual functioning during the emerging adult transition years would not depend solely on people’s personal capacity to ‘go it alone’. Tanner (2006) argues, for example, that the transition to adulthood is inherently relational. Despite the seeming lack of a normative pattern of experience during this period, she suggests that there is a central developmental task for emerging adults, called *recentering*. This is understood as a process that entails a renegotiation of individual-environment relationships, through which young people shift their adolescent dependence on their parents to a series of *systems commitments* in the form of

obligations to and dependence on multiple actors, including romantic partners, friends, and employers.

For many young people, accumulated experiences and acquired skills will interact with the challenges and opportunities of the emerging adult years to maintain continuity in adaptive or maladaptive functioning. For others, however, the transition brings change. Some may use the transition to escape past difficulties. Other previously well-functioning adolescents may flounder and fall apart. The lack of an easily understood institutional structure to guide individuals through this complex life phase means that the task of recentering takes place against a backdrop of uncertainty about one's current options and future directions (Eccles, et al., 2003). Moreover, this is also a time at which some young people experiment with potentially problematic behaviours related to drug and alcohol use and unsafe sex (Bachman, Wadsworth, O'Malley, Johnston, & Schulenberg, 1997; Eccles, et al., 2003). Those who arrive at the transition hampered by developmental histories of school bullying may find it particularly difficult to negotiate the new settings of emerging adulthood in a non-aggressive manner. However, the present research starts from the premise that experiences embedded within the transition itself could amplify or disrupt continuity from school bullying to adult aggression. If heavy drinking and/or different work and study roles can limit or expand future life options, what potential might they hold for altering the developmental pathway from childhood bullying to adult aggression?

Of the two proximal experiences that are the focus of this research, drinking is a freedom that can increase the risk for aggression, particularly for the aggression-prone, while work and study participation entail sets of experiences within quite different institutional contexts that may impinge on pathways of aggression in complex ways. It is easier to speculate about the significance of drinking for the bullying–aggression connection. There is a substantial research literature demonstrating the association

between alcohol and violence, and that further implicates substance use in the persistence of aggression and offending beyond adolescence into adulthood. The following section briefly summarises empirical evidence for the relationship between drinking and aggression in emerging adulthood, and draws on longitudinal evidence to suggest that drinking is a ‘snare’ that functions to maintain aggressive behaviour amongst former bullies.

Following this, the bulk of the chapter is devoted to a discussion of the significance of participation in higher education and employment during emerging adulthood for disrupting or intensifying pathways of aggressive behaviour from childhood and adolescence. The relative length of this discussion reflects the complexity and heterogeneity that characterises the patterning of occupational role transitions amongst 21st century youth. Moreover, as noted, these patterns have arisen from major changes to the nature of the youth labour market and the structure of the higher education system. Although there is a long history of research on the role of employment in desistance from offending (for example, Sampson & Laub, 1993) the relatively recent timing of these changes mean that the significance of contemporary work and study transitions for continuity in problem behaviour has been less often examined. In particular, any implications of the substantial increase in the proportion of school-leavers who attend university in industrialised nations have largely not been addressed in the longitudinal aggression literature. It is therefore necessary to cast the net more widely to speculate about possible impacts of contemporary work and study experiences on the bullying – aggression connection. To this end, I review more general theoretical perspectives on youth transitions and functioning from the emerging adulthood field. I then present recent empirical evidence from a set of studies that have examined patterns of continuity and change in delinquency and violence during adulthood in relation to work and study factors.

In the final section of the chapter I consider the implications of the evidence reviewed for the relationship between school bullying and adult aggression in the present study. Specifically, I suggest ways in which the effects of drinking and institutional role for disrupting or intensifying aggressive pathways could differ depending on developmental trajectory of bullying during school.

1. Drinking

The legal drinking age in Australia, 18, coincides with the end of high school and the onset of emerging adulthood. While emerging adults who do drink most likely consumed their first alcoholic beverage well before the legal age, drinking as a social activity becomes developmentally normative and accepted after the end of high school. It is central to the social lives of many emerging adults. In most western countries, emerging adults drink more than the rest of the population, and heavy episodic or binge drinking behaviour is particularly prevalent in this age group. Some studies suggest that drinking serves some adaptive functions in the 20s, for example by facilitating the further development of self-regulation. On the whole, however, very frequent and binge drinking are not regarded as developmentally harmless. Not only can such drinking patterns negatively affect young people's physical health and role functioning, they are associated with public problems like damage to property, offending, antisocial behaviour, violence, and interpersonal harm (Aseltine Jr. & Gore, 2005).

Drinking and aggression

Alcohol intoxication is an immediate situational precipitator of violence. There is no doubt that violence is more likely to be perpetrated by people who are intoxicated, and to occur in settings where people are drinking (Farrington, 2007b; Kretschmar & Flannery, 2007). Many violent offenders, for example, report having been intoxicated when the incident occurred (Murdoch, Pihl, & Ross, 1990). In an analysis of the

circumstances surrounding violent crimes in Sweden, Wikström (1985) concluded that about three-quarters of offenders and about half of victims were drunk at the time violence occurred.

There is a very long history of research on the association between alcohol and aggression. Experimental research shows that alcohol has at least some causal effects on the aggressive behaviour of college students in laboratory settings, although the exact mechanisms are unclear (Bushman, 1997). According to Graham and Homel (2008), around 50 theories have been proposed to explain how alcohol affects aggressive behaviour. Many explanations focus on the detrimental impact of alcohol on cognitive functioning. For instance, alcohol may decrease the ability to complete complex cognitive operations, which can in turn lead to impulsive actions and decision-making. Alcohol acts as a stimulus as well as a sedative and is therefore associated with increased arousal and heightened emotional reactivity, which may also affect cognitive performance (Giancola, 2000). For example, strong feelings of anger will inhibit a person's ability to search widely and deeply for cognitive scripts to guide behaviour in conflict situations, increasing the likelihood that he or she will access the most readily available aggressive one (Huesmann, 1998). In sum, alcohol can produce a sort of 'cognitive myopia' that leads people to use violence because they fail to 'think twice' and consider the consequences of their actions. However, the pharmacological links between alcohol and violence are complicated, and most research suggests that any such effects of alcohol on aggression depend on interactions with contextual factors and characteristics of the individuals involved.

Particularly significant during the emerging adult years are the features of the establishments—pubs, bars and clubs—in which drinking typically occurs. Some drinking settings are more conducive to violence than others. Situational analyses show that physical factors such as crowding, heat, and noise are sometimes correlated with

greater numbers of violent incidents, but the factors most clearly implicated in alcohol-related aggression are features of the social environment. Many studies show that the overall level of intoxication of patrons, for instance, is positively associated with the frequency and severity of aggression. Moreover, very high levels of intoxication may be more likely in socially permissive environments. Permissive behavioural expectations, such as staff and patron tolerance for swearing and rowdiness correlate strongly with violence across several studies. Such conditions give rise to many situational precipitators of violence, such as provocations, triggers to offend, and perceptions that low-level physical and sexual aggression will not be punished. Finally, permissive settings may increase the ease with which individuals can use alcohol as an excuse for behaviour that would be inappropriate in other settings. As illustrated by Ben and Dave's story in the Introduction, these are settings in which minor incidents can escalate into violence, sometimes even drawing in those who are not particularly intoxicated or violence-prone.

It is generally accepted that alcohol-related aggression is likely to occur when there is a combination of the pharmacological effects of alcohol, immediate situational factors that facilitate violence, and a cultural context that tolerates alcohol-related aggression (Graham & Homel, 2008). Importantly, however, these factors do not necessarily cause violence. Many young people are never aggressive when drinking, no matter how much they drink, or where and with whom they choose to drink. An act of aggression also requires the presence of a person who is open to the possibility of being aggressive in that situation. Those who are more likely to be aggressive are also those most likely to drink heavily. Many of the child and adolescent predictors of heavy drinking in early adulthood are shared with predictors of violence in early adulthood and numerous studies confirm that antisocial behaviour in childhood and adolescence predicts heavy drinking in young adulthood (for example, Andersson, Mahoney,

Wennberg, Kuehlhorm, & Magnusson, 1999; Englund, Egeland, Oliva, & Collins, 2008; Harford & Muthén, 2000; Maggs, Patrick, & Feinstein, 2008; Wiesner, Kim, & Capaldi, 2005). The early adult drinking behaviour of former school bullies has not been specifically examined, but studies with high school-aged samples show that frequent excessive drinking is most common amongst adolescents classified as bullies (Forero, et al., 1999; Kaltiala-Heino, Rimpelä, Rantanen, & Rimpelä, 2000; Liang, et al., 2007). As adolescent drinking behaviour is one of the best predictors of early adult drinking behaviour (Schulenberg, Wadsworth, O'Malley, Bachman, & Johnston, 1996), it seems likely that school bullies will continue to drink at above average levels during emerging adulthood.

Overall, there is evidence that the association between drinking and aggression is partly spurious, and can to some extent be accounted for by other underlying factors, such as male gender or a general incapacity to regulate behaviour. However, some researchers argue that drinking might increase violence over and above the effect of these 'third variables'. A recent study carried out by Felson and colleagues (2008) was specifically designed to disentangle these effects. The authors used data from US National Longitudinal Study of Adolescent Health to examine associations between adolescents' (grades 9 to 12) self-reported involvement in physical fights and prevalence, frequency and quantity of drinking. Results showed that drinkers were more likely to be violent while sober than those adolescents who did not drink, and this relationship was as strong as the total relationship between prevalence of drinking and any violence, sober or not. In other words, there was a degree of spuriousness in the association between prevalence of drinking and violence. Amongst adolescents who did drink, however, there was evidence that more frequent drinking had an additional independent effect on violence.

Most importantly, Felson and colleagues' analyses showed that drinking had stronger effects on violence for more aggressive adolescents. When analyses were restricted to include only those adolescents who had been involved in at least one fight in the past year, those who had been involved in more fights were significantly more likely to have been drinking during the most recent violent incident than those who were less violence-prone, after controlling for frequency of drinking. Interestingly, these effects were no stronger for males than females. The implication of these findings is that, whatever the pharmacological or contextual mechanisms, alcohol is more likely to lead to violence for those who are already predisposed to behave aggressively.

Drinking and continuity of aggression

Longitudinal studies consistently demonstrate strong associations between antisocial behaviour and heavy drinking during adolescence and early adulthood (Fergusson & Horwood, 2000; Huang, White, Kosterman, Catalano, & Hawkins, 2001). Several studies also show that adolescent drinking and substance use predict persistence of offending into adulthood (Farrington, 1995; Ouimet & Le Blanc, 1996; Stoolmiller & Blechman, 2005; White, Loeber, & Farrington, 2008). Generally speaking, delinquent adolescents who drink heavily and/or use drugs are much more likely to continue to be antisocial as young adults. Thus, drinking has long-term effects on adult antisocial behaviour. However, consistent with the effects reported by Felson and colleagues, some evidence suggests that heavy drinking can exert contemporaneous, short-term effects on emerging adult aggressive behaviour, beyond what would be expected based on individual propensities for violence. In other words, drinking may actively inhibit desistance during emerging adulthood itself, even after controlling for earlier drinking and antisocial behaviour. Hussong and colleagues (2004) argue that substance use, including drinking, acts as a 'snare' that hinders the normative process of 'emerging desistance' from antisocial behaviour in the transition to adulthood. Snares are

considered to be factors that actively retard desistance from antisocial behaviour, as opposed to ‘turning point’ factors such as marriage and stable employment that actively promote it.

Using data from male participants in the Dunedin study, the authors used latent trajectory modelling to show that the overall group-level decline in antisocial behaviour assessed at ages 18, 21 and 26, masked individual variability in patterns of desistance. That is, the slopes and intercepts of trajectories for some individuals deviated from the overall declining pattern, being steeper or shallower than group-level slope. Subsequent models were designed to determine whether this heterogeneity would be better accounted for by the ‘launching’ effect of age 18 substance use, or by the contemporaneous ‘ensnaring’ effect of substance use. Substance use included heavy drinking and marijuana use; I focus on findings for drinking. Consistent with findings from other longitudinal studies, greater alcohol use at 18 did predict above-population-level antisocial behaviour at 21 and 26. However, time-specific variations away from predicted trajectories were also related to contemporaneous heavy drinking. In other words, at times when young men were drinking more, they engaged in more antisocial behaviours than would be expected from their overall estimated trajectory. Of particular interest for the present study, this time-varying effect was *strongest* during emerging adulthood (ages 18 and 21). This suggests that alcohol posed the greatest risk for antisocial behaviour during the post-high school years, when drinking generally reaches its peak for all young people.

Similar findings are reported in other longitudinal analyses. Morizot and Le Blanc (2007) also used latent trajectory modelling to examine distal and proximal factors associated with desistance from offending from mid-adolescence to age 41, using data from the Montreal Two-Samples Longitudinal study, a study of males arrested for delinquency in 1974 and 1975. Of interest were the long- and short-term

effects of a wide range of individual and contextual factors. Consistent with Hussong and colleagues' findings, adolescent substance use (a combined measure of marijuana, hard drugs and alcohol abuse) predicted slower declines in criminal activity to age 41, but offending increased at times when men were using more substances even after accounting for the adolescent launching effect. Finally, Loeber, Pardini, Stouthamer-Loeber and Raine (2007) examined factors that differentiated males who were seriously delinquent during early adolescence (ages 13–16) but had desisted by late adolescence (ages 17–19) from those who maintained their antisocial behaviour. These males were members of the youngest cohort in the Pittsburgh Youth Study (PYS), a prospective longitudinal study of delinquency, substance youth and mental health comprising three cohorts of males (ca. 500 in each cohort) randomly selected from the first, fourth and seventh grades of Pittsburgh public schools in 1987. These boys were assessed biannually for three years, and yearly thereafter up to the mid-twenties for the oldest sample. The researchers examined multiple distal and concurrent risk and promotive factors. As expected, both groups of delinquent boys exhibited overall poorer behavioural, health and occupational outcomes by age 19 than non-delinquent boys. However, boys who had desisted by age 19 were no more likely than boys who were never delinquent to be drinking heavily by this age. Persistently antisocial boys, on the other hand, were more likely to be drinking frequently and in large quantities.

In summary, these findings support the general association between drinking and violence/antisocial behaviour. Consistent with Felson and colleagues' analyses, they show that drinking can maintain aggressive behaviour patterns in early adulthood over and above the effect of past behaviour, past drinking and other risk factors. At the end of this chapter I discuss the implications of these findings for the bullying – aggression connection examined in the present study.

2. Work and study

Forty years ago, there was a relatively rapid and well-structured progression from school to work. Completion of compulsory schooling was largely sufficient for young people (mostly men) to obtain entry-level jobs that would lead to stable, long-term employment. Only a small minority—the clever and/or affluent—entered university study after completing high school (Johnson, 1993). In recent decades, economic and social change has greatly prolonged the education-to-work transition into at least the mid-20s. The developmental phase of emerging adulthood, therefore, is defined by work and study role transitions. In order to understand the significance of these role transitions for pathways of aggression, it is important to view the developmental functions of work and study in current historical context. One consequence of the major changes to the youth labour market and increased participation in higher education is that the ‘meaning’ and everyday implications of ‘being in work’ or ‘being in study’ may be quite different for a 20 year-old woman in 2006 than they were for 20 year old woman in 1976. It is useful to bear these changes in mind when comparing findings from longitudinal studies conducted with older samples against those carried out more recently. This section therefore commences with a brief description of the main features of participation in the labour market and education participation during emerging adulthood. Although I concentrate on Australian statistics, similar patterns are observed throughout the industrialised west (Furlong & Cartmel, 1997; Hamilton & Hamilton, 2006; White & Wyn, 2004).

Tertiary education in Australia

Tertiary education options in Australia may be broadly divided into university study and various vocational education and training options (VET). Schooling in Australia is compulsory to grade 10 (age 15), but the majority of school-leavers

undertake some form of tertiary study or training. Of these, over half go to university, and are usually enrolled in a Bachelor degree, which comprises three or four years' full-time study¹. VET refers to a wide range of courses, including apprenticeships. Most people study for VET qualifications with government-funded providers which offer subjects in a variety of fields, including hospitality, computing, business, health and so on. These institutions are similar to US two-year or community colleges. VET courses can lead to a wide range of qualifications, from certificates that recognise basic vocational skills to advanced diplomas. VET courses are generally of shorter duration than university courses, and students can choose to complete only one or two subjects to gain specific skills. Young VET students, therefore, are much more likely than university students to study part-time (CIT, 2008).

The youth labour market

As in the rest of the industrialised west, the Australian economy has undergone major changes in the second half of the 20th century. Overall, there has been a shift from an economy based on manufacturing and processing of raw materials to a rise in 'knowledge' industries based on information and communications technologies and the service sector. These changes have resulted in the creation of some highly skilled jobs in some sectors, but most of the growth in employment has been in low-skill jobs in the service sector, many of which are part-time and casual in nature (Australian Bureau of Statistics, 2002). Despite the increase in low-skill jobs, there is an increased demand for higher education qualifications for even entry-level jobs. In consequence, young people in the immediate post-high school years are overwhelmingly employed in part-time and

¹ It should be noted that, for Australian undergraduates, living in a residential college is most common for students from rural areas. The major universities, as well as the majority of the population, are overwhelmingly located in the seven state and territory capitals. Most urban university-bound school-leavers therefore attend a university in their home city, continuing to live at home for at least the first few years of study. The young people in the present sample are all from Canberra-based families, and at Time 3 were largely still in Canberra. There are no residential college students in the sample.

casual jobs in the clerical, sales and service sector. Importantly, it is not just tertiary students who hold such jobs. In 2005, for example, around 40% of people aged 20–24 who were working in a part-time job were not studying full-time either. Finally, although young people who do not study may work full-time hours, they are more likely than older workers to achieve this by working more than one part-time job (Australian Bureau of Statistics, 2004, 2005b).

To summarise, young people depart school into a fluid labour market that is characterised by part-time, casual and temporary jobs. Employment is far from guaranteed, and jobs that are available without post-secondary qualifications tend to be low-status and short-term, and unlikely to feed into long-term career paths. For these reasons, many more young people study than in the past. However, pathways through work and study are complex and non-linear. Sociologists argue that the contemporary transition to adulthood is characterised by movement through a fragmented and often disconnected patchwork of institutions (Settersen 2006). For instance, young people may enter, exit and re-enter part- or full-time study multiple times throughout their 20s. Moreover, the vast majority of students combine work with study in some way, generally by studying full-time and working casual hours (Australian Bureau of Statistics, 2005a).

Research on youth transitions suggests that both work and study are less central to emerging adults' sense of personal identity than other domains like leisure, family and relationships (Osgood & Flanagan, 2008; White & Wyn, 2004). Nonetheless, there is no doubt that for young people between the ages of 18 and 25, work and study roles are realities of everyday life. Moreover, although they are combined more often than not, statistics suggest that one activity tends to take precedence in young people's lives. It is rare, for example, for young adults to be working part-time and studying part-time.

Thus, the worlds of work and study represent distinct ‘institutions of orientation’ during emerging adulthood.

This study contrasts individuals in two different situations that reflect a basic difference in post-high school direction: young people whose main occupation is employment-oriented, and young people whose main occupation is oriented towards university study. The term *institutional role* is a useful way to describe this situation. Employment and tertiary education may be regarded as social institutions that are defined by specific sets of norms and values, regulations, and routines (Scott, 2001). They are characterised by different physical environments and relationships, impose different demands upon young people, and are entered by young people who hold different expectations about their current and future functions. Institutional role captures these social influences while avoiding confusion with other social roles such as parent or spouse, or the myriad specific combinations of emerging adult occupational roles.

Theoretical perspectives on transitions to work and university during the emerging adult years: Implications for social functioning and aggression

Research on desistance in offending suggests that the new occupational options available during emerging adulthood could open up a wealth of unprecedented opportunities for youth who were bullies during the school years. Based on Glueck and Glueck’s longitudinal study of delinquent boys, Sampson and Laub (Laub, et al., 1998; 1993) contend that that steady employment in the early adult years facilitates a move away from crime amongst individuals who were delinquent in adolescence. This is because it provides informal control over antisocial behaviour, strengthening investment in conventional social institutions and relationships, and increasing personal responsibility. Thus, employment can act as a turning point, enabling troubled youth to begin making the sorts of systems commitments that reward conventional behaviour and speed desistance from offending. Findings from many longitudinal studies of

offending confirm this promotive effect of employment, showing that delinquent adolescents who desist in early adulthood tend to report more stable employment during these years than those who continue their antisocial behaviour (Horney, Osgood, & Marshall, 1995; Moffitt, 1993; Sampson & Laub, 1993; Uggen, 2000).

The criminological field, however, has paid less attention to the role of adult study experiences in processes of post-adolescent persistence and desistance. There are several good reasons for this, the most obvious of which is that most antisocial and delinquent adolescents simply don't ever proceed to tertiary education. The association between child and adolescent externalising behaviour and educational underachievement is robust. Indeed, most research on antisocial behaviour and education focuses on either analysing the various pathways to poor educational outcomes for aggressive children (for example, Brook & Newcomb, 1995; Dubow, Huesmann, Boxer, Pulkkinen, & Kokko, 2006; Farmer, 1995; Fergusson & Horwood, 1998), or describing the protective effects of early school achievement for mitigating the risk of adolescent externalising behaviour (for example, Kosterman, et al., 2001). The significance of emerging study experiences in adulthood for continuity of antisocial behaviour has been less often examined. There is also an historical reason for this: many of the major longitudinal surveys of crime and violence were initiated some decades ago (for example, Pulkkinen & Pitkänen, 1993; Sampson & Laub, 1993). Study members, now in their 40s and older, left high school well before the 1980s when post-compulsory education was a far less common undertaking during the transition to adulthood than it is for the current generation. In other words, employment was the developmentally normative experience in the transition to adulthood. Given the broad labour market shifts described, this raises the question of how applicable findings from these studies are to emerging adults in the 21st century. At a time when most Australian students who complete high school continue to further study and training, and up to

50% go to university (Rothman, 2005; Rothman & Hillman, 2008), does university study play any role in continuity of aggression from childhood to emerging adulthood?

The developmental significance of going to university has been most thoroughly examined within the emerging adulthood literature. As noted, developmental criminology theories ascribe the benefit of employment for antisocial youth to increases in conventional social bonds and adult responsibilities. Tertiary education, by contrast, tends to extend the duration of emerging adulthood and delays the assumption of adult roles like marriage and parenthood (Tanner, 2006). From this perspective, university students might be expected to remain psychologically immature, experiencing an extended maturity gap and continuing to engage in ‘adolescence-limited’ antisocial behaviour. The emerging adulthood research, however, suggests a different picture. Although outcomes of interest in this field tend towards constructs such as psychosocial maturation (for example, identity formation, mastery), mental health, and risky health behaviours (for example, unsafe sex, drug use) rather than aggression, it provides a useful starting point for considering mechanisms by which a university-oriented role might affect trajectories of aggression during emerging adulthood.

University plays multiple roles in young adult development, providing many opportunities beyond educational qualifications and improved occupational prospects (Eccles, et al., 2003). Emerging adulthood is a time when individuals ‘take stock’, spending time deciding what they are good at, what sort of work they will enjoy, and thinking about what to do with their lives. In other words, they are creating a sense of adult identity (Arnett, 2006b; White & Wyn, 2004). Emerging adulthood theorists draw on Erikson’s (1968) theory of life-span development to propose that university functions as an *institutional moratorium*, or a structured context in which to work through these concerns and complexities (Côté, 2006). University affords young adults a ‘time out’ during which they are free to explore different ideas, values, lifestyles and

political views in a relatively safe environment, while delaying taking on the responsibilities associated with adult roles like parenthood and full-time employee (Flanagan, 2006; Sherrod, Haggerty, & Featherman, 1993).

Attending university may also be positively and significantly associated with further cognitive development. Labouvie-Vief (2006), for instance, argues that new and complex forms of cognition, beyond the later Piagetian formal stages, emerge *after* adolescence and can mature rapidly during emerging adulthood. These forms comprise high-level abstract thinking that afford increased abilities in domains such as complex moral reasoning and reflective emotional cognition. However, the development of these skills is seen as probabilistic, and only likely to come to fruition in the right contextual conditions. Labouvie-Vief contends that the college environment is ideally suited to foster this process. One reason may be that college provides many opportunities for students' existing viewpoints to be challenged. Another is that the many other mature complex thinkers present in the college setting act as mentors for the development of the same skills in the next generation.

Overall, emerging adulthood theorists argue that university may provide the clearest and most institutionally structured route through the years of exploration between 18 and the late 20s. It is regarded as a defined context that is particularly well-suited to scaffold young adults' recentering as they progress towards adult systems commitments, which constitutes the central developmental task of contemporary emerging adulthood (Sherrod, et al., 1993; Tanner, 2006). To what extent might these 'latent benefits' of going to university be related to changes in problem behaviour during emerging adulthood? One possibility is that further cognitive development might bring an increased capacity to acknowledge different viewpoints and regulate emotions, and these skills could provide some youth with improved strategies for resolving conflicts. Another is that troubled youth lucky enough to go to university might

experience increased exposure to many high-achieving, motivated peers in a context generally disapproving of physical aggression, allowing them to make a break with former problematic peer contexts.

Where does this leave the other half of school leavers who do *not* go to university? If the above discussion of personal exploration sounds very middle-class, that's because it is. Despite increasing participation, university remains a privilege mainly accessible to the affluent. The single best predictor of going to university is socio-economic status, not high school academic achievement (Haveman & Wolfe, 1995). Furthermore, much of the emerging adulthood research is based on analyses of US college student samples (for example, Côté, 2006; Labouvie-Vief, 2006), and for this reason the theoretical concepts are somewhat class- and culture-bound. Does the developmental phase of emerging adulthood, and its associated tasks, even apply to young people in other post-industrial nations like Australia who do not go to university? Arnett (2000) and others argue that it does. For one thing, concepts from emerging adulthood theory have been increasingly employed by both US and non-US researchers in a variety of fields, including health (Bell & Lee, 2008), criminology (Hayford & Furstenberg, 2008; Piquero, Brame, Mazerolle, & Haapanen, 2002), and sociology (Ball, Maguire, & Macrae, 2000; White & Wyn, 2004), indicating the usefulness of the overall perspective for analysing different aspects of young people's experiences between the ages of 18 and 25. More importantly, labour market statistics in Australia and Europe as well as the US certainly suggest that *all* school-leavers, regardless of study status, experience a period of job instability and 'milling about' in their 20s (Marks, 2006). In fact, some data suggests that this period of instability lasts longest for those young people with the least education (Osgood & Flanagan, 2008).

Whether these 'milling about' patterns for non-university bound youth reflect a process of exploration and identity formation, or instead indicate realistic responses to a

precarious labour market is difficult to say. However, they do support Arnett's claim that both university-student and non-university-student youth share the population features of emerging adulthood. What they do not share are the same contexts of emerging adulthood (Tanner, 2006). Côté (2006) argues that the developmental moratorium is in some sense 'imposed' upon non-university-student emerging adults, regardless of whether their environments provide the institutional structure to support it. The concern expressed by researchers is that the lack of discrete, easily understood, and institutionally supported patterns to structure the complex transition to adulthood makes the life phase particularly challenging for adolescents who are not clever, lucky, or rich enough to go to university after they finish high school. Eccles and colleagues (2003) argue that these youth are at increased risk of 'floundering' during emerging adulthood. For youth who arrive at the transition already disadvantaged by adolescent problem behaviour, this sense of floundering could adversely affect health and functioning. If non-university oriented young adults do miss out on the latent benefits of the university context such as delayed assumption of adult roles and advanced cognitive development, and these benefits do promote desistance from aggressive behaviour, might a primarily employment-oriented institutional role increase the risk that youth with a history of aggression continue this behaviour in the emerging adult years?

On the other hand, work experiences during emerging adulthood could be very beneficial for former bullies. Adolescents who bully others generally also exhibit poor school adjustment and academic difficulties (Nansel, et al., 2004; Stein, Dukes, & Warren, 2006). Work experiences that provide former bullies with opportunities to experience success and develop competence in this new adult domain may enable these young people to escape the accumulated failures of past school contexts and discontinue associated patterns of aggressive behaviour. Similarly, work could contribute to positive psychosocial development and the development of a mature adult identity, by providing

emerging adults with a 'stake' in adult society and the broader national economy.

Another possibility is that emerging adulthood employment could engender the sorts of social bonds and related informal social control that Sampson and Laub (1993) show can help offenders reform. Full-time work requires young adults to commit to regular hours and be accountable to managers and other employees, and these responsible activities are generally inconsistent with problem behaviours like physical aggression. Emerging adults primarily oriented towards employment might also be more likely than full-time university students to rely on their jobs to support themselves, and this could hasten the rate at which former bullies adopt other conventional and responsible adult roles. Furthermore, new relationships with mature co-workers and employers could exert some informal social control, as well as provide opportunities to move away from antisocial peers contexts.

Changes to the nature of the youth labour market, however, mean that it is uncertain whether the sorts of employment experiences available to people in their early 20s do in fact confer such benefits. Similarly, although the benefits of university study have been emphasised, it has been noted that the transition to university brings risk as well as opportunity. Moffitt (2002) argues that the lengthening of the transition to adulthood also lengthens the amount of time that emerging adults are exposed to snares like drinking and substance use. As university students take even longer to assume adult roles than workers, their duration of exposure to such snares could be even further extended.

The effects of emerging adult work and study on aggressive trajectories: Evidence from longitudinal studies of delinquency

The empirical evidence regarding the significance of post-high school study and/or work roles for continuity of aggression is inconclusive. In this section I discuss findings from four recent North American longitudinal studies that have analysed

variations in trajectories of delinquency and violence during the early adult years in relation to concurrent work and study experiences.

The first two studies report findings from the Pittsburgh Youth Study (Loeber, et al., 2008). Using data from the oldest sample, Stouthamer-Loeber, Wei, Loeber and Masten (2004) examined factors that acted to promote or inhibit desistance from offending in early adulthood (ages 20–25) amongst males who were persistent serious delinquents throughout adolescence (ages 13–19). Serious delinquent behaviours included robbery, break and enter, assault, and rape. Although the authors examined a very wide range of risk and promotive factors measured between ages 13–19 as predictors of early adult desistance, of most relevance here are concurrent associations between work and study experiences between ages 20 – 25 and desistance. Overall, desisters experienced more positive early adult outcomes than persisters. Compared to persisters, more desisters held higher-level professional jobs and reported more stable employment histories between ages 20–25. Importantly, however, being a student and/or employed for 95% of the time throughout this period predicted desistance even after controlling for all other risk and promotive factors measured from age 13. Unfortunately, the work/study variable did not differentiate between these domains. However, the authors noted that very few delinquents from either group had obtained a college degree or advanced qualification by age 25, and suggested that desistance might be associated with positive gains in the employment rather than educational domain.

Loeber, Pardini, Stouthamer-Loeber and Raine (2007) reported a similar analysis of desistance using data from the youngest PYS cohort. This study examined factors that differentiated youth who were seriously delinquent during early adolescence (ages 13–16) but had desisted by late adolescence (ages 17–19) from youth who maintained their antisocial behaviour. Once again, the researchers examined multiple distal and concurrent risk and promotive factors, including the combined

employed/student variable described. As expected, both groups of delinquents exhibited much poorer educational and employment outcomes than non-delinquent boys, but for this cohort, being employed or a student between the ages of 17–19 failed to distinguish between the delinquents who persisted and those who desisted.

These two PYS studies suggest that being a student, and especially being employed, in emerging adulthood may be associated with desistance amongst formerly delinquent adolescent males, but that these effects may not be observed for all troubled adolescents at all ages. In other words, successful engagement with emerging work and study domains during the early adult transition years may function to disrupt antisocial pathways for some individuals with histories of problem behaviour, but not others.

Roisman, Aguilar and Egeland (2004) specifically addressed this issue using data from a high-risk poverty sample of 102 men and women born in Minneapolis between 1975 and 1977, and followed up at multiple assessments to age 23. The externalising outcome throughout the study was aggressive and delinquent behaviour, assessed at various times via parent, teacher and self-report, using instruments such as the CBCL and Youth and Young Adult Self Reports (YSR, YASR). Drawing on Moffitt's (1993) developmental taxonomy, four groups were identified on the basis of reported levels of externalising behaviour from childhood to mid-adolescence: a group who were not antisocial at any point, a child-limited group who were antisocial during childhood only (ages 6 to 12), an adolescent-onset group who were first classified as antisocial in adolescence (age 16), and an early-onset persistent group who were antisocial throughout childhood and adolescence. These groups were assessed once more at age 23. Two aspects of work and study were considered. The first was study/work status, representing the prevailing pattern of working and/or studying between ages 21 and 23. For example, a high rating on this variable indicated that an individual had spent at least 75% of the time in full-time work, study, or a combination of the two, while a low

rating indicated little or no study or work experience. Also assessed was 'work ethic', a scale indicating the degree to which an individual considered employment to be an important part of their identity, as well their reported level of 'irresponsible' employee behaviour, such as turning up late.

The key question was whether these measures of engagement in the work domain during emerging adulthood could account for variation in adult behaviour within, rather than between, the trajectory groups. Consistent with findings from other longitudinal studies, the child-adolescent persistent group had the most difficulties in all areas of adjustment at age 23. For example, they were most likely to continue their antisocial behaviour, had the lowest educational attainment, and worst work ethic scores. Despite this, positive and negative work outcomes were not associated with higher or lower levels of concurrent externalising behaviour across the whole sample. Instead, effects were specific to the persistently antisocial subgroup: being employed/studying and reporting a higher work ethic were associated with lower levels of externalising behaviour for this group only. Work experiences were not related to externalising behaviour for the other three trajectory groups. In other words, although young adults who were persistently antisocial throughout childhood and adolescence were far less likely to be fully engaged in work/study during the transition to young adulthood, variation *within* this group was largely attributable to those who did achieve some success in this domain. The authors suggested that, by providing these quite troubled youth with opportunities to achieve in an emerging institutional domain, employment might have offered a chance to move away from the failed contexts of the past that had functioned to maintain antisocial behaviour during childhood and adolescence.

The final study provides further illustrations of subgroup-specific consequences of emerging adult work and study roles for continuity of problem behaviour. Roche and

colleagues (2006) examined whether entry into adult roles (including work, advanced education, parenthood and independent living away from the family home) at age 20 could account for continuity of aggressive and violent behaviour from age 13. The sample included 1,077 male and females from low-income families in urban Baltimore. Seventh-grade teachers assessed age 13 aggression (for example, fights, lies, breaks others' things), and at age 20 the participants self-reported their involvement in serious violence (robbery and weapon carrying for men, and robbery, weapon carrying and fighting for women). In a departure from the previous three studies discussed, four different combinations of work and tertiary study roles were examined separately, including (1) an under-engaged group, who were neither working full-time (35 hours a week or more), nor studying, (2) a group who were working full-time and not studying, (3) a group primarily engaged in tertiary study, who were not working full-time but were enrolled in advanced education (two- or four-year college program, community college, VET program), and (4) a group who were both working full-time and enrolled in advanced education.

Consistent with other studies, young people who were highly aggressive in early adolescence were far less likely to proceed to advanced education than the rest of the sample, although early aggression did not predict entry into full-time work. The effects of adult work and study roles for continuity of aggressive behaviour were mixed. Overall, the results showed that both work and study roles had the potential to disrupt pathways of aggression from early adolescence, but that these effects differed in important ways for males and females. For males, enrolment in advanced education accounted for a significant portion of the relationship between early aggression and adult violence. After controlling for early aggression, males who were seeking advanced education at age 20 were less likely to be violent than those who were not in advanced education, regardless of work status. Thus, advanced education acted to increase the

spread in levels of aggression between individuals that was already apparent at early adolescence. Findings for females were more complex. Although neither work nor study accounted for variance in adult violence beyond the early risk conveyed by adolescent aggression at the female sample level, moderation analyses showed that full-time work had opposite effects on adult violence depending on parenthood and independent living. Compared to occupational under-engagement, full-time work without study was associated with *less* adult violence for women who had become parents by age 20, but *more* adult violence for women who were living independently. Thus, for at-risk women who did not seek advanced education, work had an inhibitory or promotive effect on desistance depending on other life circumstances.

Overall, the findings from these four studies suggest that full-time engagement in some form of work and/or study role after leaving high school can hasten the process of desistance amongst young adults who were delinquent during adolescence. The institutional context most clearly implicated was the workplace: Stouthamer-Loeber et al. (2004) Loeber et al. (2007) and Roisman et al. examined being engaged in either work and/or study without differentiating between the two, and Roisman et al. also examined work ethic as a correlate of desistance. Only Roche et al. (2006) directly compared the effects of involvement in study and work, but did not distinguish between university and other forms of post-high school education and training. Thus, while the evidence supports the promotive function of being mostly employed for the behaviour of formerly delinquent emerging adults, it does not present a clear picture regarding the effects, if any, of university study for this outcome. Nevertheless, the findings do confirm the salience of post-high school work and study experiences for explaining some of the variation in trajectories of serious delinquency and violence in the transition to emerging adulthood. More broadly, the evidence is consistent with the notion that changes in institutional context at the emerging adult transition can sometimes result in

markedly improved person-environment match, and that when this occurs, it can result in turnarounds in problem behaviour.

3. Chapter summary and implications for the present study

Research shows that individuals who begin to be antisocial in childhood and persist into adolescence are less likely than individuals on an adolescent-onset trajectory to desist from such behaviour during emerging adulthood. However, there is also significant heterogeneity in adult behaviour, even within the high-risk persistent trajectory group. This chapter has discussed theoretical and empirical evidence for the impact of experiences related to drinking and institutional role status during emerging adulthood on such heterogeneity in pathways of aggression from childhood to the early 20s. The opening section described the unique features of the emerging adult life phase and outlined the challenges and opportunities that these features present to youth as they negotiate the post-high school years. Drawing on systems theories, I argued that, like other major normative transitions, the pervasive social and contextual role changes during the transition to emerging adulthood alter the way people fit with and relate to their environments.

Longitudinal studies show that these shifts in person-environment fit can encourage both continuity and discontinuity in trajectories of antisocial behaviour, depending on developmental strengths and weaknesses arising from past levels of aggression, individual characteristics, social functioning and demographic factors. In other words, although different subgroups of emerging adults arrive at the transition differently equipped to negotiate new social and institutional settings in a non-aggressive manner, the evidence suggests that experiences embedded within the new settings, and the ways in which people respond to them, can themselves account for some variation in pathways of aggression from childhood. In general, evidence suggests

that positive life events involving the formation of conventional social bonds, such as marriage and employment, promote desistance, while snares such as substance use inhibit desistance. Theorists argue, however, that the effects of such factors for disrupting or exacerbating pathways of antisocial behaviour during emerging adulthood differ markedly between members of different antisocial trajectory groups. Moffitt (2002), for instance, speculates that any positive ‘turning point’ effects associated with early adult life events will be most applicable to members of adolescent-onset trajectory groups. This is because the pervasive social and behavioural dysfunction that characterises the life-course persistent trajectory group will decrease the likelihood that these individuals will encounter such salutary events. The relatively less troubled adolescent-onset young people, on the other hand, will have the capacity to take advantage of turning point opportunities in the early adult years.

In this study I ask (1) whether levels of aggression in early adulthood are associated with different drinking patterns or institutional roles, and (2) whether any such effects vary across bully trajectory groups. For example, is early adult drinking more strongly associated with violence for persistent bullies? Might employment or university study during emerging adulthood disrupt pathways of aggression for some former bullies but not others? To assess this, I test whether institutional role and/or drinking moderate the association between the risk factor (bullying trajectory during school) and the outcome (physical aggression in early adulthood). The following discussion briefly considers the implications of the evidence reviewed in this chapter for these questions.

The studies reviewed provided ample evidence that drinking and work/study transitions can account for variation in adult aggression over and above the effects of past aggression and other risk factors, such as *x* and *y*. As noted in the previous section, positive employment and study experiences were generally associated with less

aggression amongst emerging adults, over and above effects of past antisocial behaviour. With regard to drinking, Felson and colleagues' (2008; Felson, Teasdale, & Burchfield, 2008) analyses of North American and Finnish adolescent samples showed that heavy drinking accounted for additional variance in self-reported violence over and above effects of both prior drinking patterns and prior involvement in violent situations. Consistent with these findings, longitudinal studies suggest that drinking can exert short-term contemporaneous effects on aggression during emerging adulthood beyond what would be predicted given child and adolescent histories of aggression (Hussong, et al., 2004; Morizot & Le Blanc, 2007).

Some of the studies showed that drinking and work/study factors functioned to mediate the association between earlier aggression and adult aggression. A consistent finding was that antisocial young people were at greatest risk of making a poor transition into emerging adulthood. Delinquent adolescents were at greater risk of poor work and study outcomes (for example, fail to complete high school, spend more time unemployed, fail to obtain an advanced educational qualification), and were more likely than non-delinquent adolescents to drink heavily. To the extent that these experiences were associated with concurrent functioning, they served to increase the 'spread' between those who were doing poorly prior to the transition and those who were doing well. For example, Roche and colleagues showed that, for males, the relationship between seventh-grade aggression and early adult violence was mediated by advanced education: those who were least aggressive in the seventh grade were most likely to undertake advanced education, and this experience was associated with less emerging adult violence. The implication of these patterns for the present study is that early adult transition experiences might fail to account for 'turnarounds' in behaviour for former bullies, instead exacerbating subgroup differences in ongoing trajectories of behaviour.

This is the process that Schulenberg, Maggs and O'Malley refer to as *increased heterogeneity* (2003).

On the other hand, some of the studies suggested that consequences of experiences during the transition to adulthood—be they positive or negative—did not affect the antisocial behaviour of the entire sample of emerging adults in the same way. The clearest evidence for subgroup differences was found in studies relating to work and study transitions. Although not all the studies reviewed specifically examined moderating effects, or within-subgroup variation in offending as it related to work/study variables, two general patterns were apparent. First, there was no indication that that less optimal work/study outcomes (for example, periods of unemployment) were associated with sudden late onset of difficulties in youth with no history of antisocial behaviour. Rather, such 'off-diagonal' beneficial and detrimental effects were most salient for young people with histories of delinquency. For some former delinquents, work and study experiences contributed to 'turnarounds' in behaviour. Some of the persistent serious adolescents in the Stouthamer-Loeber et al. (2004) study, for example, were employed and/or studying at ages 20–25, and these young people were more likely to have desisted than those delinquents who were not employed or studying.

Second, Roisman and colleagues' analyses showed that even these off-diagonal effects did not apply to *all* former delinquents. In contrast to Moffitt's proposition that life-course persistent delinquents will not benefit from early adult turning points, the authors found that positive work and study experiences during emerging adulthood were associated with desistance only for young people who had been persistently aggressive since childhood. The authors argued that, while the most aggressive individuals were least likely to experience positive occupational outcomes, variation in antisocial behaviour *within* this group was largely attributable to those who for some reason did manage to successfully engage in post-high school realms of work and study.

This finding is more broadly consistent with some theorists' arguments that promoting factors show a stronger effect under high-risk conditions than low-risk conditions. That is, while the most aggressive young people may be less likely to encounter turning points, those who are lucky enough to do so have the most to gain from the experience (Rutter, 1987, 1994). These findings imply that engagement in different post-high school institutional roles might provide persistent bullies with opportunities to break away from prior difficulties and establish more positive behavioural patterns.

There was also some evidence that effects of snares like drinking can vary depending on developmental history of aggression. Felson and colleagues' analyses (2008) showed that the exacerbating effect of drinking for late adolescent violence was *greatest* for those individuals who had been most violent in the past. The authors argue that these findings are consistent with theories suggesting that alcohol increases the risk of aggression primarily for the violence-prone. In this case, drinking might be more strongly associated with aggression for persistent rather than adolescent-onset bullies. However, as discussed earlier, the proximal effects of features of the social environments in which drinking takes place during emerging adulthood might precipitate violence even for young people with fewer aggressive tendencies. Moffitt (1993) argues that substance use will act as a snare to inhibit desistance even for the less-aggressive adolescent-onset delinquents. Although differential relationships between substance use and adult desistance within the Dunedin study trajectory groups has not been examined, Hussong and colleagues' analyses demonstrated a time-varying increase in antisocial behaviour associated with drinking that did not appear to vary based on earlier antisocial behaviour.

To summarise, the evidence reviewed in this chapter confirms that emerging adult transition experiences can affect aggressive pathways, and suggests a number of different possibilities about the ways in which drinking and institutional role might

affect continuity and discontinuity from school bullying to adult aggression in the present study. However, as outlined in the research model at the end of Chapter 1, proximal effects of early adult transition experiences are only one link in the chain of events from childhood bullying to adult aggression. Regardless of whether effects of emerging adult drinking and/or work and study experiences are additive, accounting for variance in adult aggression for the whole sample, or interactive, accounting for variance in adult aggression to different degrees across subgroups of emerging adults, the developmental theory and evidence strongly suggests that the amount young people drink and their different work and study situations after high school will be outcomes of cumulated earlier strengths and weaknesses. To what extent might positive or negative effects of the transition experiences reflect *earlier* differences in pathways of functioning during school? More broadly, what other school-years experiences might contribute to adult aggression?

These questions pertain to longitudinal mediated pathways from school bullying to adult aggression. Consistent with the overall developmental perspective, evidence suggests that the effects of distal factors for adult aggression may unfold over time in complex ways (Dodge & Pettit, 2003). Some school-years factors may exert direct effects upon future aggression, while others may operate indirectly, relating to events occurring later in the chains of events that eventuate in violent behaviours. In the next chapter I provide a theoretical background to such possible pathways in this study. This involves taking a step back to the school years to flesh out the earlier parts of Figure 1.1. I discuss measures of socio-emotional functioning at Times 1 and 2 (see Figure 1.1), and review findings from earlier waves of the Life at School study showing how these factors contribute to continuity in bullying over the primary school to high school transition. Might these processes also carry through to affect the likelihood of aggression in early adulthood? If so, how? What aspects of school experience in the

present study are theoretically related to increased risk or drinking and different post-secondary work and study roles? Chapter 3 addresses these issues.

CHAPTER 3:
CHILDHOOD AND ADOLESCENT MEDIATORS IN THE PATHWAY FROM SCHOOL
BULLYING TO ADULT AGGRESSION: SOCIO-EMOTIONAL FUNCTIONING DURING
PRIMARY SCHOOL AND HIGH SCHOOL

So far in this thesis I have mostly focused on bullying as a distal predictor of adult aggression, and considered ways in which proximal influences associated with institutional role and drinking in the transition to emerging adulthood might disrupt this relationship. Assuming that bullying *is* likely to be related to aggression, a further issue that arises is that of documenting the intervening processes involved.

Important as early aggression is for predicting later aggression, it is unlikely that bullying will be the only distal variable in the pathway leading to adult aggression. Developmental studies instead implicate multiple distal risk factors and varying paths to early adult aggressive behaviour. These risk factors reside both in the individual and within his or her interpersonal, social, and institutional contexts. Certain distal risk factors (e.g. impulsivity) are sometimes shown to lead directly to aggressive behaviour (Nagin & Tremblay, 1999). However, these same factors are also linked to other diverse adult outcomes, such as delinquency, substance use, educational failure, poor mental health, and unemployment, which may themselves be the proximal conduits for violence. Moreover, risk factors within the individual and features of his or her social contexts may be correlated with each other and mediate each other to lead to aggressive outcomes (Broidy, et al., 2003; Tremblay, 2000). Investigating the ways in which early bullying and other risk factors mediate each other to adolescent experience, reverberate in early adulthood, and subsequently lead to aggression is an important task. This is because understanding *when* and *why* and for *whom* discontinuities in aggression occur at various points along the pathway from childhood to emerging adulthood, is critical to informing intervention efforts to effectively re-route these pathways.

Mediating factors of interest in this study relate to aspects of socio-emotional functioning within the school context during primary school and high school. Specifically, I focus on school adjustment, (including academic functioning and school liking/connectedness), impulsivity and shame management. These constructs reflect healthy socio-emotional functioning in childhood and adolescence, and also predict a range of adult outcomes, including levels of antisocial behaviour, social functioning, mental health, and occupational attainment. The first construct relates to children's self-regulatory abilities, particularly with regard to regulation of behaviour and emotion, and is represented by shame management (regulation of emotion) and impulsivity (regulation of behaviour). The second construct relates to connectedness and bonding within the institutional context of the school, and is represented by measures of school adjustment.

The aim of the current chapter is to review evidence suggesting how interrelationships among these socio-emotional factors influence the unfolding of bullying and aggression across childhood, adolescence and adulthood. The bulk of the chapter focuses on describing how shame management, school adjustment and impulsivity are related to each other and to bullying over the transition from primary school to high school. This focus is warranted because although theoretically all of the aforementioned socio-emotional variables could be equally important in the prediction of adult aggression, previous research with these data carried out by Life at School researchers shows that shame management is the main predictor of bullying during primary school and high school. Moreover, school adjustment and impulsivity have been shown to relate to both bullying *and* shame management during the school years (Ahmed, 2001).

In the first section of the chapter I provide a brief overview of empirical evidence for links between school adjustment, impulsivity and bullying. I then turn to a

more specific discussion of shame. The second section reviews the emotion of shame and its role in interpersonal functioning and aggressive behaviour. Much of the research in this area is found in the clinical literature, linking shame to a range of internalising and externalising disorders. Research on emotion regulation, on the other hand, views both the experience and expression of emotion as sets of ongoing, mutually influential person-environment transactions. From this perspective, the consequences of any emotion for individual wellbeing are dependent upon the way that emotion is regulated.

Ahmed's (2001) shame management theory draws on these concepts to explicitly describe socially adaptive and maladaptive ways of regulating shame. Ahmed developed and tested the theory in the first wave of the Life at School study, when the young people in the current sample were in primary school (Ahmed, 1999, 2001; Ahmed & Braithwaite, 2004a, 2004b). I introduce this theory in the third section and review empirical findings from previous Life at School research in the fourth section. Shame management theory purports to explain how the way in which children manage feelings of shame relates to their bullying behaviour. Moreover, it is designed to draw together many of the disparate social and individual correlates of bullying (e.g. parenting styles, self-esteem, empathy, family conflict, school experiences) into a cohesive framework that explains how these factors lead to bullying by the way in which they help or hinder socially adaptive shame management.

Ahmed showed that children's shame management skills mediated the relationships between impulsivity, school adjustment, and bullying. That is, impulsivity and school adjustment influenced the degree to which children were able to regulate feelings of shame in a socially functional manner, with shame management subsequently predicting bullying. Longitudinal analyses using data from Times 1 and 2 (Ahmed, 2006; Braithwaite, 2006; Braithwaite, et al., 2003) showed that continuity in bullying between primary school and high school was mediated by continuity in shame

management. Moreover, findings support the possibility that continuity in adaptive shame management is itself mediated by continuity in positive school adjustment.

In the fourth section I consider the significance of these interrelationships among socio-emotional variables and bullying during the school years for continuity of aggression into adulthood. Longitudinal studies show that, although many of the factors that predict aggression at earlier ages are also associated with violence at later ages, the effects of these risk factors are unlikely to operate independently of either earlier aggression or later proximal experiences. On the basis of this literature, I argue that the socio-emotional factors that maintain bullying during school will have consequences for adult aggression, but pathways are likely to be complex. I outline evidence supporting several possible mechanisms. For instance, it is possible that socio-emotional variables could make direct contributions to the prediction of adult aggression, beyond the risk conveyed by bullying. Alternatively, it is also possible that their effects could be indirect, mediated by (a) bullying, and/or (b) emerging adult drinking and institutional role.

In the final section of the chapter I return to the research model presented at the end of Chapter 1 (Figure 1.1), drawing together the argument presented across these opening chapters to outline the specific research questions that will be addressed by the data analyses that follow.

Impulsivity, school adjustment and bullying

Impulsivity

Developmental researchers have repeatedly found that aspects of behavioural undercontrol, including hyperactivity, impulsivity, risk-taking and inattention, predict aggressive and violent behaviour in both childhood and adolescence (Caspi, Henry, McGee, Moffitt, & Silva, 1995; Farrington, 2005a). More specifically, numerous

studies in several disciplines document both the concurrent and longitudinal predictive relationship between impulsivity and a range of problem behaviours in children and adolescents (for example, Luengo, Carrillo-de-la-Peña, Otero, & Romero, 1994; Olson, Schilling, & Bates, 1999; White, et al., 1994). Lösel and colleagues (2007), for instance, showed that an impulsive and unconsidered social information processing style in grade 7/8 boys strongly predicted physical aggression, verbal aggression and delinquency in grade 9/10. Unsurprisingly, children who bully tend to be more impulsive than their peaceable peers (Rigby & Slee, 1993; Slee & Rigby, 1993). Terranova et al. (2008) conducted a short-term longitudinal study of bullying amongst 10 year-old US children. Low capacity to inhibit behaviour and inattention at the first measurement predicted increases in bullying six months later. Similarly, Espelage et al. (2001) found that high levels of impulsivity in grade 6–8 predicted greater levels of bullying four months later.

School adjustment

Different researchers emphasise different aspects of school attachment, connectedness and bonding, and there is no standard way to operationalise this construct. However, it is agreed that factors such as a sense of belonging, emotional attachment to the school community and perceived respect from others in the environment are associated with healthy child and adolescent functioning and a decreased likelihood of problem behaviour (Catalano, Haggerty, Oesterle, Fleming, & Hawkins, 2004; Cunningham, 2007). There are several theories that could account for these associations. According to the Social Development Model (Hawkins, et al., 2003), for instance, school connectedness represents a prosocial bond, consisting of emotional attachment to the school setting and an investment in or commitment to the norms and values of school, such as academic competence and rule-abiding behaviour. This increases the individual's 'stake' in conforming to standards of behaviour valued in the school context, decreasing the likelihood of antisocial behaviour that would be at odds

with these standards. Other theorists (Eccles, et al., 1993) suggest that when there is a good ‘fit’ between the developmental needs that children and adolescents bring to the school setting and the supports actually provided by the school, problem behaviour will be less likely.

Whatever the mechanisms, many longitudinal investigations show that lack of school engagement and commitment and low academic achievement are associated with elevated levels of problem behaviour and violence in childhood and adolescence (for example, Herrenkohl, et al., 2003; Herrenkohl, et al., 2000; Hinshaw, 1992; Loeber, et al., 2008; Piquero, Brezina, & Turner, 2005; Thornberry, Lizotte, Krohn, Smith, & Porter, 2003; Welsh, Parke, Widaman, & O’Neil, 2001; Wilson, 2004). This pattern is mirrored in the bullying literature. Overall, primary school and high school students who report bullying others also tend to report lack of commitment to school behaviour norms, lack of emotional attachment to the school environment, and poor academic functioning (Demary & Malecki, 2003; Nansel, et al., 2004; Nansel, et al., 2001; Stein, et al., 2006). For example, bullying was negatively correlated with liking school in a sample of Australian high school students (Rigby & Slee, 1993). Drawing on the social development model, Cunningham (2007) showed that measures of emotional bonding to school, commitment to the school rules, and a valuing of academic achievement were able to discriminate between bullies and non-bullies in early adolescence. These findings suggest that positive school adjustment functions to decrease the likelihood of bullying in childhood and adolescence.

Shame, aggression and emotion regulation

Shame is an inherently social emotion that is aroused by self-related aversive events. It is a member of the family of moral emotions, along with guilt, pride and embarrassment. These emotions are sometimes described as ‘self-conscious’ because

they are characterised by an evaluation of one's own actions with regard to internal and external standards, often by taking others' perspectives on those actions (Keltner & Beer, 2005). This ability to assess the appropriateness of one's own behaviour 'in the eyes of others' is regarded as crucial to the development of conscience and internalisation of moral standards (Damon, 1988; Kochanska, 1993). In this study, the focus is on shame that occurs in response to being discovered engaging in a social transgression². When an individual feels shame in response to a transgression, he or she evaluates his or her actions with regard to both personal and moral standards, and with regard to the normative standards of a salient social group. In other words, experiencing shame signals to an individual that he or she has behaved in a way that is at odds with either internal standards, and/or those of important others. This realisation is associated with extreme emotional discomfort, including despair, hopelessness, and a sense of failure.

Research on the significance of shame for psychological wellbeing has a long history in the clinical literature. Several different theories describe how shame is linked with violence and aggression. The common explanation for the linkage is based on the relationship between shame and anger. Broadly speaking, it is suggested that shame can be such a painful and distressing experience that people develop defensive reactions to protect the self from being overwhelmed by feelings of inadequacy and humiliation. These strategies often take the form of defensive anger, whereby a person is able to avert feelings of shame by directing anger towards external objects and other people.

² There is a long and ongoing debate within the emotion literature regarding the distinction between the different moral emotions, particularly between shame and guilt. Some theorists view shame as purely 'self-focused', aroused by a generalised discrepancy between one's actual and ideal self, while guilt is focused on a specific event and does not involve a threat to the whole self. From this perspective, it is argued that guilt is more likely to lead offenders to seek reparation for a misdemeanour. However, most researchers also recognise that shame and guilt are highly correlated, and in practice, these theoretical distinctions are difficult to detect (Eisenberg, 2000). While recognising this debate and the importance of measurement issues, this study is concerned purely with the relationship between the different ways people respond to shame and their aggressive behaviour. For reviews of the shame-guilt distinction, refer to Tangney (1990) and Harris (2001).

Research psychologist and psychoanalyst Helen Lewis (1971, 1987) analysed hundreds of clinical sessions to develop a pioneering theory of shame. A major insight from this work was the concept of unacknowledged shame. Lewis described shame as unacknowledged when patients were either a) unable to recognise being in a state of shame or b) shame was felt but successfully ‘by-passed’ by making others the target of humiliated fury.

Lewis’ early work was influential in shaping later theorising about the functions of shame for psychological wellbeing and interpersonal relationships. The sociologist Thomas Scheff (1988, 2000) for example, describes shame as a threat to the bond with significant others. This occurs because shame is evoked when we evaluate our own actions in the eyes of others. Within a secure relationship, shame can be acknowledged and the bond repaired. Shame within an insecure relationship, however, will remain unacknowledged, leading to alienation and escalation of interpersonal conflict. Another clinical perspective on the shame-aggression connection is found in the research of Tangney (1992), who put forward the idea of shame-proneness. This is a personality characteristic that is defined by a tendency to experience shame as a threat to the whole self. According to Tangney, shame-prone individuals are likely to direct anger and hostility towards others because the global attack on the self is so overwhelmingly painful that functioning becomes difficult. Attempts are therefore made to ward off this negative experience by blaming others for the shame-evoking event and directing hostile actions towards the external environment. Tangney and colleagues’ empirical research has demonstrated an association between shame-proneness and aggressive behaviour in children and adolescents (Tangney, Wagner, Hill-Barlow, Marschall, & Gramzow, 1996; Tangney, Wagner, Fletcher, & Gramzow, 1992).

This very brief review of shame theories has painted a picture of shame as a maladaptive and potentially harmful experience. However, emotion regulation theorists

argue that quality of behaviour and functioning is linked not to the presence or amount of any particular emotion, but to the way in which that emotion is managed. The basic premise is that emotions have different individual and social consequences depending upon how they are regulated.

Emotion regulation is a broad construct that encompasses a number of related intra- and interpersonal processes. At the most general level, emotion regulation refers to changes resulting from an activated emotion. These may include changes in the emotion itself, changes in other psychological processes, such as cognition and memory, and changes in social interactions (Cole, Michel, & Teti, 1994). Emotion is simultaneously *regulated by* person and environment, and *regulating of* person and environment. Most research has focused on emotions as they are regulated by those who experience them. The actions that a person takes in response to feeling a certain way can modify, enhance, transform, or minimise that emotional experience. For instance, an individual may hold anger in check to avoid damaging a relationship, ‘laugh off’ an embarrassment, or even completely deny feeling the activated emotion. Various cognitive distortions may also be used to reinterpret the meaning of the event such that the emotion is modified. For example, a frustrating situation might be re-framed as a ‘challenge’.

Consistent with a developmental systems perspective, however, theorists emphasise that emotion regulation takes place within a social context. It is assumed that the actions taken by an individual to modulate emotion are made in response to the environment, that their expression functions to regulate others’ responses, and that these in turn provide influential feedback to the individual. For instance, an adolescent girl’s expression of sadness at a poor test result might prompt a friend to offer a hug, and this in turn might reduce the intensity of the girl’s sadness. A less positive example is found in Patterson’s (1982) coercive cycle, in which a child defies the parent, who becomes

angry, leading to an escalation of child and parental anger until one party yields. In other words, these parent-child dyads' attempts to influence each other result in escalation of both parties' anger.

Thus, emotion regulation may be broadly conceptualised as sets of mutually influential person-environment transactions by which individuals respond to ongoing emotional experience. Adaptive emotion regulation involves the ability to flexibly respond to both self and environment in ways that are appropriate to specific situations. Such processes are associated with continued positive functioning. Maladaptive emotion regulation involves under- or over-regulation of emotion and selection of responses that are poorly timed or socially inappropriate. Poor emotion regulation is implicated in most forms of childhood psychopathology. For example, children and adolescents who exhibit externalising behaviour tend to undercontrol feelings and expression of anger (Eisenberg, et al., 1997). Social information processing theorists suggest that excessive anger increases the likelihood of aggressive responding by hampering children's ability to search widely for alternative cognitive scripts in conflict situations (Dodge, 2003; Huesmann, 1998).

From an emotion regulation perspective, then, shame is neither inherently 'good' nor inherently 'bad'. Instead, the consequences of experiencing shame for individual functioning, interpersonal relationships and behavioural outcomes are viewed as dependent on the way it is regulated. Although scholars since at least Freud have written about the importance of the moral emotions for adaptive social functioning (Keltner, Moffitt, & Stouthamer-Loeber, 1995), different ways of regulating moral emotions has not attracted the same degree of detailed attention in the contemporary field as that afforded basic affects like fear, anger and sadness. Ahmed's (2001) shame management theory draws on concepts from the clinical research mentioned to specify the relationship between different ways of regulating shame and school bullying. In

describing the features of this theory that are relevant to the present study I refer mainly to Ahmed's 2001 publication, in which she summarises the development of the approach and presents empirical findings from the first wave of the Life at School study.

Shame management theory

The departure point for Ahmed's theory is that, when managed well, shame can serve a positive social function. For instance, the experience of shame functions to regulate individual behaviour by motivating people to avoid future transgressions (Keltner & Beer, 2005). Shame can be experienced both in response to a past event, or in anticipation of the consequences of a future event. The aversive shame experience provides clues to an individual as to what sort of behaviours should be avoided in the future. Conversely, people who do not feel the discomfort of shame at having committed a transgression are not likely to be motivated to avoid future transgressions. Moreover, displays of shame have important regulatory effects on the environment. Actions like expressing responsibility, exhibiting emotional distress, and moving to make amends for wrongdoing communicate to others that the person is sorry for the transgression, and willing to conform to the community's normative standards in the future. This, in turn, may prompt others to respond in ways that repair social relationships, with offers of sympathy and forgiveness. Conversely, failure to express shame, or lashing out with angry actions, does not prompt reconciliatory responding from others, and interpersonal relationships remain damaged.

As discussed, shame occurs when a person realises he or she has behaved in a way that is contrary to personal normative standards. In shame management theory, this realisation is described as a threat to the *ethical identity*, defined as global sense of the self based on ethical values (Harris, 2001). The distress of shame is accompanied by a

need to restore the ethical identity. Shame management refers to the actions taken by the individual in response to such shame-evoking situations. These actions refer to both attempts to modulate the actual experience of the emotion, and the behaviours and secondary emotions that result from the original emotional experience. Different actions will produce different changes in both the person and the environment, and these will have different consequences for individual wellbeing, future behaviour, and social functioning. When shame is managed, the emotion is itself altered, and the expressions and behaviour that it motivates have regulatory effects on the environment. Shame management as a term captures these various processes.

Shame management strategies vary along two theoretically orthogonal dimensions: *shame acknowledgement* and *shame displacement*.

Shame acknowledgement

When shame is acknowledged, individuals admit that their behaviour was morally wrong or socially unacceptable. This is likely to lead to an acceptance of responsibility for the act, along with a desire to make amends. According to Ahmed, shame acknowledgement is a two-step process, consisting of, first, activation of an *internal sanctioning mechanism*, and second, *discharge of shame*. Internal sanctioning is a self-regulatory response that involves (a) admission of shame over the wrongdoing, (b) taking responsibility, and (c) feeling a desire to make amends. At the end of this first stage, shame is acknowledged, *but not yet really dealt with*. Restoration of social bonds and individual ethical identity requires that shame be adequately discharged. For this to occur, internal sanctioning must be accompanied by (a) escape from a state of blameworthiness, which can lead to pathological self-rejection, and (b) escape from a state of anger, in which distress is alleviated by externalising blame.

In summary, individuals who are able to admit that their actions were wrong or hurtful are expected to acknowledge their shame by accepting responsibility. Further

realising that it may not be possible to retain an intact ethical identity without help, they are motivated to express responsibility and remorse. This represents an attempt to restore wellbeing through interaction with the environment.

Shame displacement

In this state, the individual experiences some feelings of shame but is unable to handle them in a socially appropriate way. The feeling of shame alerts the individual to the ethical identity threat, and this is associated with psychological distress, anxiety and a fear of others' condemnation. However, the fear of further damage to the self is so great that it is too risky to take the step of admitting wrongdoing. In other words, the individual cannot restore a sense of wellbeing by acknowledging shame. This may give rise to a number of alternative strategies aimed at modulating negative emotions. These take the form of ego defence mechanisms that allow the individual to avoid blaming him or herself. For instance, an individual may attempt to regain a sense of control by transforming shame into displays of aggression, externalising blame onto others, and cognitively distorting the situation to deny that anything shameful has occurred (Cole, et al., 1994).

Adaptive and maladaptive shame management and antisocial behaviour

Shame management is a process in which the person and environment mutually regulate each other. Thus, different ways of managing the shame experience on the part of the offender will set in motion different transactions with the environment, with differing consequences for social functioning.

Adaptive shame management is characterised by acknowledgement of shame in the absence of displacement. These strategies serve several important related functions. First, acknowledged shame restores social relationships that have been damaged by the transgression. When shame is acknowledged, the offender is motivated to engage in

displays of the emotion, such as admissions of responsibility and regret. These expressions signal to others that the individual is willing and able to adhere to the moral standards of the group. Ideally, group members will respond to the offender's acknowledgement with reconciliatory behaviours that are aimed at restoring the offender as a valued group member. These acts strengthen the social bond between the offender and the group. According to the social development model (Hawkins, et al., 2003) discussed earlier, the formation of a secure social bond will increase an individual's 'stake' in conforming to the norms and values of the group, which inhibits future transgressions.

Maladaptive shame management may take two forms. The first of these is *over-regulation* of shame, which involves a failure to acknowledge shame in response to wrongdoing. Associations between lack of shame, callousness, disregard for others' wellbeing, and aggression are widespread in the psychopathology literature (Keltner & Beer, 2005). Holmqvist (2008), for example, found that serious young male offenders who reported lower consciousness of shame feelings had higher psychopathy ratings than those who were better able to articulate and express shame experiences. When individuals are not bothered by their behaviour, it is unlikely that they will be motivated to express displays of shame like regret and apology. Once again, there is evidence that antisocial individuals tend to engage in less displays of shame than the general population. Keltner and colleagues (1995) conducted a detailed examination of the facial emotional expressions of aggressive and non-aggressive 12 and 13 year-old boys who were engaged in an IQ test with a school authority figure. Externalising boys displayed less moral emotions, such as embarrassment, during the task than non-externalising boys.

In the second form of maladaptive shame management, an offender feels shame but is unable to discharge it in an appropriate way. Instead, the offender attempts to

protect the ethical identity through displacement, by transforming shame into rage and externalising blame. Thus, displacement largely involves under-regulation of anger, which is a reliable predictor of externalising behaviour, including bullying (Bosworth, Espelage, & Simon, 1999; Camodeca & Goossens, 2005; Eisenberg, Guthrie, et al., 2000; Espelage, et al., 2001).

The consequences of both forms of maladaptive shame management are a damaged social bond and increased likelihood of future transgression. Since others in the environment generally expect social transgressions to be followed by appropriate display of moral emotion, a lack of shame acknowledgement is a signal that the offender is unwilling to comply with normative standards. The angry actions of displacement additionally indicate that the offender is not willing to regulate their behaviour in line with these standards. Neither strategy is likely to elicit reconciliatory action from others in the environment. Rather, they may prompt rejection and anger, and in the case of displacement, hostility and harsh discipline (Coie, Dodge, Terry, & Wright, 1991; Ohman, Dimberg, & Esteves, 1989). These negative responses act to further distance the offender from the group, decreasing the likelihood that he or she will take on the group's moral standards as part of his or her own ethical identity. The erosion of the social bond and subsequent lack of belief in the moral order means that the offender is not likely to anticipate shame in response to future transgression. Thus, maladaptive shame management facilitates continuity in antisocial behaviour.

Shame management and bullying

On the basis of these concepts, Ahmed proposed that children who can manage shame well, by acknowledging and not displacing, will be unlikely to bully other students, while children who manage shame poorly, by failing to acknowledge and/or displacing, will be more likely to bully. To test this, Ahmed devised the MOSS-SASD scale (Management of Shame State–Shame Acknowledgement and Shame

Displacement) to assess how children would manage their shame should they be caught bullying another student. The MOSS-SASD is a self-report measure in which children are presented with a number of different hypothetical scenarios in which a child is described as bullying another and is caught in the act by a teacher. Children are asked to imagine themselves in the role of the bully in each scenario, and then respond to ten questions about how they would feel. An item tapping shame acknowledgement, for instance, is 'Would you feel like blaming yourself for what happened?' while an example of a displacement item is 'Would you feel angry in this situation?' This measure is described further in Chapter 4.

Cross-sectional findings from Time 1 showed that, as expected, children who bullied others endorsed responses characterised by high displacement and low acknowledgement, while the responses of children who never or only rarely bullied others were characterised by low displacement and high acknowledgement (Ahmed, 2001). These different shame management styles may therefore be regarded as children's emotional 'scripts' for how they would respond if discovered bullying another child.

These findings confirmed the importance of shame management as a predictor of bullying. However, it was not the only important factor. At Time 1, for example, bullying was also associated with a range of school, personality and family factors. The list included higher impulsivity, more academic/social hassles at school, less liking for school, lower internal locus of control, and greater perceived family disharmony. According to Ahmed's theory, such factors will feed into children's shame management skills, either inhibiting or promoting children's capacity to respond to transgressions in ways that restore both personal functioning and bonds with the environment. In this way, shame management was predicted to function as a mediator between diverse aspects of the child's developmental ecology and their bullying behaviour. As

discussed, in the present study I restrict the analysis to (a) school adjustment and (b) impulsivity.

As shame management occurs as sets of person-environment transactions in the school setting, the quality of a child's relationship with this environment will influence the way he or she regulates shame, just as those responses regulate others in the environment. Theorists suggest that contexts in which individuals feel secure and supported facilitate adaptive emotion regulation, particularly of negative emotions (Eisenberg, 2000). Ahmed argued that the school social context was particularly important for facilitating shame acknowledgement. There are two key reasons for this. First, shame arises because an individual realises that he or she has violated the ethical norms of a valued social group. Therefore, the extent to which an event is even shame-activating depends upon the strength of the individual's 'stake' in the normative standards of the group. If strong school adjustment is indicative of a commitment to standards of the school context, transgressions should be likely to arouse shame. Second, the nature of the social setting may affect whether an individual is able to take the next step and effectively acknowledge and discharge shame. Acknowledging shame is a challenging experience, requiring individuals to expose their ethical identity to further potential damage. Ahmed suggests that, in order to effectively manage shame, children need to perceive the school to be a 'safe space' in which admissions of wrongdoing will be met with support and reintegration, rather than blame and anger.

Adaptive shame management, however, is assumed to be influenced by individual characteristics and regulatory skills, as well as the social context. Children who are less able to regulate their behaviour are also less able to inhibit inappropriate emotional responding (Eisenberg, Fabes, Guthrie, & Reiser, 2000; Eisenberg, Spinrad, & Morris). Adaptive shame management requires children to thoughtfully reflect upon their own behaviour and regulate responses to match internal and external standards,

while avoiding displacing shame into anger and ‘lashing out’ at others. It follows that an impulsive behavioural style, characterised by a tendency to act without thinking, failure to consider alternative behavioural strategies, and low capacity to inhibit inappropriate actions, will decrease the likelihood that children will be able to manage shame well.

As predicted, findings from Time 1 showed that children who were more impulsive were less likely to acknowledge shame and more likely to displace shame, while children who liked school less, reported more academic/social hassles, and perceived that the bullying was poorly controlled at their school were less likely to acknowledge shame. These factors were therefore indirectly related to bullying via shame management (Ahmed, 2001).

Shame management and continuity in bullying

Ahmed further proposed that maladaptive shame management scripts measured in primary school would function as a risk factor for continued bullying into high school. She argued that children who tended to displace or fail to acknowledge shame when bullying another student would miss out on the aversive shame experience that would otherwise lead to ‘thinking twice’ when contemplating future transgression.

Longitudinal analyses (Braithwaite, et al., 2003), however, showed that Time 1 measures of shame management did not directly predict Time 2 bullying. Instead, continuity in bullying across the primary school to high school transition was associated with continuity in maladaptive shame management. Controlling for Time 1 bullying, children who managed shame poorly in primary school were more likely to manage shame poorly in high school, and this predicted high school bullying beyond the effects of earlier measures. Thus, shame management functioned as a proximal mediator rather than a distal predictor of adolescent bullying. Braithwaite (2006) argues that children’s maladaptive shame responses (e.g. lashing out in anger, blaming others for their own

misbehaviour), evoke anger and rejection from others in the environment, further distancing children from the prosocial norms of the school setting and reducing the likelihood that children will adopt these norms in the future. In this way, shame management scripts that support bullying are strengthened. Finally, despite the importance of shame management, this analysis also showed that higher impulsivity, at both Times 1 and 2, continued to predict Time 2 bullying over and above the influence of shame management.

Nonetheless, this raises the question: what maintains shame management over time? Did school adjustment and impulsivity continue to be associated with shame management over the primary school to high school transition? Braithwaite and colleagues' 2003 study also examined factors that predicted shame acknowledgement and displacement in high school. Findings showed that impulsivity did not explain changes in either acknowledgement or displacement between primary school and high school. Thus, impulsivity was a better predictor of continuity in bullying than of continuity in shame management style.

Instead, continuity in shame management was most strongly associated with aspects of school experience. With Time 1 shame management controlled, children who reported greater school hassles and perceived a bullying school culture in primary school were more likely to report such perceptions in high school, and this predicted high school acknowledgement beyond the effects of earlier measures. In other words, children who continued to acknowledge shame in high school may have done so because they maintained positive school adjustment across the primary school to high school transition. Changes in displacement, in contrast, were less well explained by such measures, suggesting that the ability to admit responsibility for wrongdoing (acknowledgement) was more responsive to perceptions of school 'safe space'.

The interplay between shame acknowledgement and perceived school environment over the primary school to high school transition is consistent with Eccles' and colleagues' stage-environment fit model, drawn from their program of research focusing on the contribution of changes in school context over the middle-school transition to increases and decreases in academic, social, and emotional functioning (Eccles, Lord, & Roeser, 1996; Eccles, et al., 1993; Roeser, Eccles, & Sameroff, 1998). These researchers argue that healthy functioning at this time is dependent on the degree of fit between the needs and characteristics that adolescents bring to new school settings, and the adequacy with which schools actually provide opportunities that meet these needs. Based on this concept, children who arrive at the transition to high school with a history of poor school adjustment and difficulties managing shame may well lack the resources to forge positive connections with the school setting. Since shame management is facilitated by strong perceived support within the school context, this may, in turn, contribute to further declines in shame management and increases in bullying.

To summarise, these earlier Life at School findings suggest that children who arrived at the transition to high school with a history of poor school adjustment and difficulties managing shame lacked the resources to forge positive connections with the high school setting. This, in turn, contributed to further declines in shame management and increases in bullying. Moreover, childhood impulsivity increased the likelihood of bullying at Time 2.

How will these interrelated processes unfold into adult aggression? If bullying shows continuity over childhood and adolescence because it is mediated by continuity in shame management and school adjustment, what is the role of these factors in explaining adult aggression? The developmental literature suggests that the predictive power is unlikely to lie in any single variable, but in a constellation of factors that move

forward the chain of events culminating in adult aggression (Rutter, 2003). There are at least two general hypothetical models that capture various explanations for the mechanisms by which poor regulatory control and poor school adjustment place children both at risk not only of bullying but also at risk of adult aggression. The first of these models emphasises the continuing influence of distal processes from childhood and adolescence, regardless of developmentally proximal contributions from adult drinking and institutional role. The second model emphasises interactions between distal and proximal experiences in the explanation of adult aggression. I discuss evidence for these two sets of relationships in the following section.

School adjustment, impulsivity, shame management and pathways from bullying to aggression

First, it may be suggested that poor socio-emotional functioning across primary school and high school directly increases the risk of adult aggression. A large body of research demonstrates associations between school failure and lack of engagement and commitment, and early adult violence and delinquency; or conversely, shows that school commitment and achievement function to protect against problem behaviour in adulthood (for example Cairns & Cairns, 2000; Farrington, Loeber, Jolliffe, & Pardini, 2008; Lacourse, Dupéré, & Loeber, 2008). Findings from adult follow-ups of children in the Seattle Social Development Project, for instance, showed that higher levels of school achievement at age 10 predicted being on a declining trajectory of violence across ages 13 to 21 (Kosterman, et al., 2001). Furthermore, rewarding school experiences (such as feeling that teachers were fair and respectful) and bonding to school predicted a lower likelihood of adult violence. The Social Development Model predicts that beliefs in prosocial norms and values at the end of one developmental period, such as the end of high school, determine the starting point for the next

developmental period by affecting perceived opportunities for future antisocial and prosocial activities. From this perspective, strong school connectedness and academic competence in high school might set the young people in this study up for continued formation of prosocial bonds in the new institutional and social settings of emerging adulthood.

Poor regulatory control in childhood/adolescence is also consistently implicated in the prediction of adult aggression. Behavioural undercontrol (e.g. impulsivity, hyperactivity) in particular is one of the most frequently demonstrated and robust risk factors for adult violence (Farrington, 2007b; Henry, Caspi, Moffitt, & Silva, 1996; White, et al., 1994). Adult outcomes of emotion regulation have been less thoroughly examined, possibly because most work in this field so far has focused on young children. The current study is the first to examine adult outcomes of shame management in childhood and adolescence. Despite the limited extant longitudinal research in shame management specifically, there is evidence in related fields to suggest that maladaptive shame management during school might predict subsequent adult aggression. The clinical literature reviewed earlier, for instance, links unacknowledged shame to rage during adulthood. More broadly, the emotion regulation literature shows that difficulties controlling negative emotions in childhood predict externalising problems in middle adolescence (Murphy, Shepard, Eisenberg, & Fabes, 2004). Pulkkinen and colleagues' research within the Finnish Jyväskylä Longitudinal Study has demonstrated associations between emotional undercontrol in childhood and early adult aggression (Pulkkinen, 2006).

One explanation for possible mechanisms underlying links between early emotion dysregulation and adult aggression is found in theories of social-information processing (for example, Huesmann, 1988). Briefly, researchers propose that any individual faced with a social problem proceeds through a sequence of several mental

and emotional steps that culminate in a behavioural response. These include, for instance, attending to and interpreting social cues in the environment and considering possible responses from a range of cognitive scripts that are stored in long-term memory and are used as guides for behaviour in different sorts of situations. Theorists argue that individuals' processing patterns represent stable features of personality that operate as mediators between past experience, situational factors, and eventual behaviour. In this way, experience, behaviour and response reinforce each other over time such that people respond in characteristic ways across a range of different settings (Dodge & Pettit, 2003; Huesmann, 1998).

Some authors have proposed that emotion regulation is an important component of social information processing. Specifically, poor regulatory skills are assumed to restrict children's capacity to process social information in ways that lead to non-aggressive responding (Lemerise & Arsenio, 2000; Musher-Eizenman, et al., 2004). It might be possible, then, that adaptive and maladaptive shame management scripts will in some way be carried forward into the new contexts of emerging adulthood.

This evidence clearly shows that poor self-regulation and school maladjustment in childhood and adolescence may be seen as salient features of a multiple risk configuration that is associated with violence throughout adolescence and early adulthood (Cairns & Cairns, 2000; Lipsey & Derzon, 1998). As noted, however, early aggression remains the best predictor of later aggression. There is considerable evidence that the effects of distal socio-emotional functioning for adult aggression are largely indirect, associated with adult violence by the way the increase aggression at earlier ages (Farrington & West, 1981; Kokkonen & Kinnunen, 2006; Kosterman, et al., 2001; Nagin & Tremblay, 1999; Rutter, 2003). Despite the stability of personality styles and social information processing patterns, the changes in social and institutional settings after the end of high school mean that the predictive power is mostly carried by earlier

measures of behaviour. Thus, an additional possibility within this ‘distal’ model is that effects of impulsivity, shame management and school adjustment during school will account for little variance in adult physical aggression once measures of bullying are taken into account.

There seems little doubt, on the basis of this evidence, that socio-emotional functioning during school is likely, either directly or indirectly via bullying, to influence adult aggression. The broad developmental perspective that has informed this thesis, however, emphasises that explanations for adult dysfunction are not always rooted in childhood. Proximal causes of adult aggression can be as powerful as distal measures of dysfunction. In Chapter 2 I considered how drinking and institutional role during the transition to adulthood might affect the likelihood that school bullying would continue to adult physical aggression. However, this developmental framework also recognises that behaviour at any point in time is the product of interplay between past experiences as well as current contexts. Through ongoing, mutually influential person-environment transactions, people tend to select themselves into different sorts of adult circumstances, which in turn make further contributions to functioning. This implies that proximal conduits of adult violence are themselves related to past developmental successes and failures.

Following this line of thinking, the second general hypothetical model suggests that distal socio-emotional functioning may be linked to adult aggression because these factors are realised in higher or lower levels of adult drinking, or a greater or lesser likelihood of university participation. Thus, even if post-high school drinking and institutional role do function to promote or inhibit continuity in aggression, these effects may themselves be influenced by pre-existing individual differences in self-regulatory skills and school adjustment. In Chapter 2 I drew on findings from longitudinal studies of aggression to suggest that school bullies would be more likely to abuse alcohol in

adulthood, and less likely to undertake higher education. This literature also confirms that the longer-term sequelae of the aspects of poor self-regulation and school maladjustment that predict adult violence also encompass a wide range of negative psychosocial outcomes in early adulthood, including increased risk of alcohol abuse and reduced educational and occupational opportunities. The evidence for these associations spans a large body of empirical research. Here, I briefly highlight selected findings with regard to first, behavioural/emotional regulation and second, school adjustment, that are most pertinent to the present discussion.

First, aspects of poor self-regulation are well-established predictors of both drinking and violence in early adulthood (Dubow, Boxer, & Huesmann, 2008); indeed, Klinteberg and colleagues showed that childhood hyperactivity was a better predictor of joint patterns of drinking *and* violence than either outcome alone (Klinteberg, Andersson, Magnusson, & Stattin, 1993). Poor control of emotions during childhood was also associated with adolescent and adult heavy drinking in the Jyväskylä Study (Kokkonen, Kinnunen, & Pulkkinen, 2002), mentioned above. It could be argued that early difficulties controlling behaviour and emotions reflect some stable aspect of personality that restricts young people's ability to drink within reasonable limits. Another possibility is that poor self-regulation increases the risk that such children will associate with antisocial peers and engage in other problem behaviours during adolescence, increasing their exposure to both heavy drinking and drinking-related violence.

Similar cumulative mechanisms may underlie links between regulatory control in childhood and educational and occupational outcomes in early adulthood. Empirical findings show that low self-control of behaviour and emotions in childhood precedes a range of poor outcomes, including lower educational attainment, lower occupational status, unemployment and unstable employment, and negative workplace experiences

(Dubow, et al., 2006; Fergusson & Horwood, 1998; Kokko & Pulkkinen, 2000; Roberts, Caspi, & Moffitt, 2003). Researchers argue that regulatory difficulties in childhood lead to subsequent occupational outcomes through a causal chain process in which low self-control interferes with children's learning and impairs early school performance. This leads to the development of negative attitudes towards school, failure in later grades, early school dropout and eventually, lack of educational prospects in young adulthood. Thus, low self-control in childhood sets in motion cascades of events throughout adolescence that result in accumulation of socio-economic disadvantage by early adulthood (Caspi, et al., 1987; Moffitt, 1993). In the final step, this disadvantage may restrict young people's employment opportunities in early adulthood to unstable or low status jobs, perhaps increasing the likelihood such youth will encounter stressful and unsupportive social environments that further exacerbate their impulsive and aggressive tendencies.

Second, there is substantial evidence that school maladjustment is a risk factor for heavier adult alcohol use and low educational/occupational outcomes (Bachman, et al., 2008; Bond, et al., 2007; Guo, Hawkins, Hill, & Abbott, 2001; Lonczak, et al., 2001). Obviously, the transition out of high school means that these links cannot be accounted for by continuity in, for instance, low school bonding. Once again, the literature suggests that these relationships are the result of cumulative processes of differential selection via antisocial peer involvement and academic failure in high school. For example, children who are poorly connected to school or who experience early academic problems may gain few positive rewards for involvement in school activities, decreasing the degree to which they are committed to the valued norms of that setting, such as academic achievement and prosocial behaviour. Unable to achieve in conventional ways, such children may instead find increased opportunities for involvement in and rewards from antisocial activities like drinking and truancy. Such

behaviours will further alienate children from the conventional school setting, resulting in increased bonding to antisocial peers and involvement in problem behaviours, and decreased commitment to further education. By early adulthood, this cycle may lead to both higher levels of drinking and restricted educational and occupational opportunities (Catalano, Haggerty, et al., 2004).

Once again, these outcomes may in turn further exacerbate aggressive or impulsive tendencies. For example, adolescents whose poor school connectedness limits their early adult employment opportunities to low-status and unstable positions may be unlikely to find opportunities for the formation of supportive conventional relationships in such contexts. It might, therefore, be argued that bullies who had difficulty acknowledging shame in school because of poor school adjustment will lack the resources to form positive connections to post-high school work or study settings, perhaps contributing to ongoing difficulties acknowledging shame and continuing aggression. This is one possible mechanism by which the interplay between shame acknowledgement and school adjustment over the primary school to high school transition may feed into adult aggression.

Summary

The first three sections of this chapter discussed ways in which two aspects of socio-emotional functioning during childhood and adolescence—emotional/behavioural regulation and school adjustment—are related to pathways of bullying during primary school and high school. In particular, findings from Ahmed and colleagues' earlier research with the larger Times 1 and 2 sample suggest that bullying between primary school and high school may be maintained by interrelationships between shame management and school adjustment over this developmental transition.

In the section above I presented two general hypothetical models that illustrated various mechanisms by which these childhood and adolescent processes might feed into

adult aggression. The first model emphasised the influence of distal factors, suggesting that, either directly or indirectly via bullying, poor socio-emotional functioning in childhood and adolescence might predict an increased likelihood of adult aggression even after children leave school. The second model, in contrast, suggested that effects of distal behaviour and functioning might instead affect aggression because these factors influence the directions that young people take after leaving high school, with these proximal experiences in turn contributing to continuity or discontinuity in aggressive behaviour. Although the models differed in emphasis, they should not be regarded as competing or mutually exclusive explanations for relationships between childhood bullying and adult aggression. Instead, they represent different sets of possible longitudinal relationships that may be present to a greater or lesser degree in these data, and for which the relative importance for explaining relationships between school bullying and adult aggression may be simultaneously assessed. Moreover, both accounts emphasise the centrality of the high school period as a critical link in the pathway between childhood and adulthood. Regardless of whether distal behaviour and socio-emotional functioning *directly* predict Time 3 aggression, or do so *indirectly* via adult transition experiences, the extent to which young people are equipped to negotiate the transition to adulthood in a non-aggressive manner will be to some extent dependent upon their success or failure in negotiating the earlier developmental transition from primary school to high school.

When considered alongside evidence presented for continuity in aggression in Chapters 1 and 2, the picture that emerges is one in which there could be multiple possible adaptive and maladaptive pathways from childhood bullying to emerging adult aggression. Within these, the significance of specific variables for aggressive behaviour may wax and wane at different developmental periods, or exert their influence indirectly via other variables. Moreover, pathways may differ between subgroups of individuals.

In the final section of this chapter I return to the research model presented at the end of Chapter 1 to outline the specific questions that will be addressed by the data analyses.

Research questions

Figure 3.1 replicates the heuristic model presented at the end of Chapter 1 (Figure 1.1). It is presented here for ease of reference. As noted in the first chapter, the model does not show direct links between Time 1 and Time 3 variables, nor does it illustrate demographic variables (sex and parental education). However, the analyses are designed to consider direct Time 1 to Time 3 paths, and background variables are controlled in each analysis.

In this thesis I ask four broad research questions. These are organised into two sets. Set A concerns the relative direct effects of distal vs. proximal variables on Time 3 aggression. Set B concerns mediated longitudinal pathways from school bullying to adult aggression, in which distal variables may exert their influence on aggression indirectly. The first question in each set tests longitudinal relationships at the sample level, and the second asks whether these relationships differ depending upon developmental trajectory of bullying.

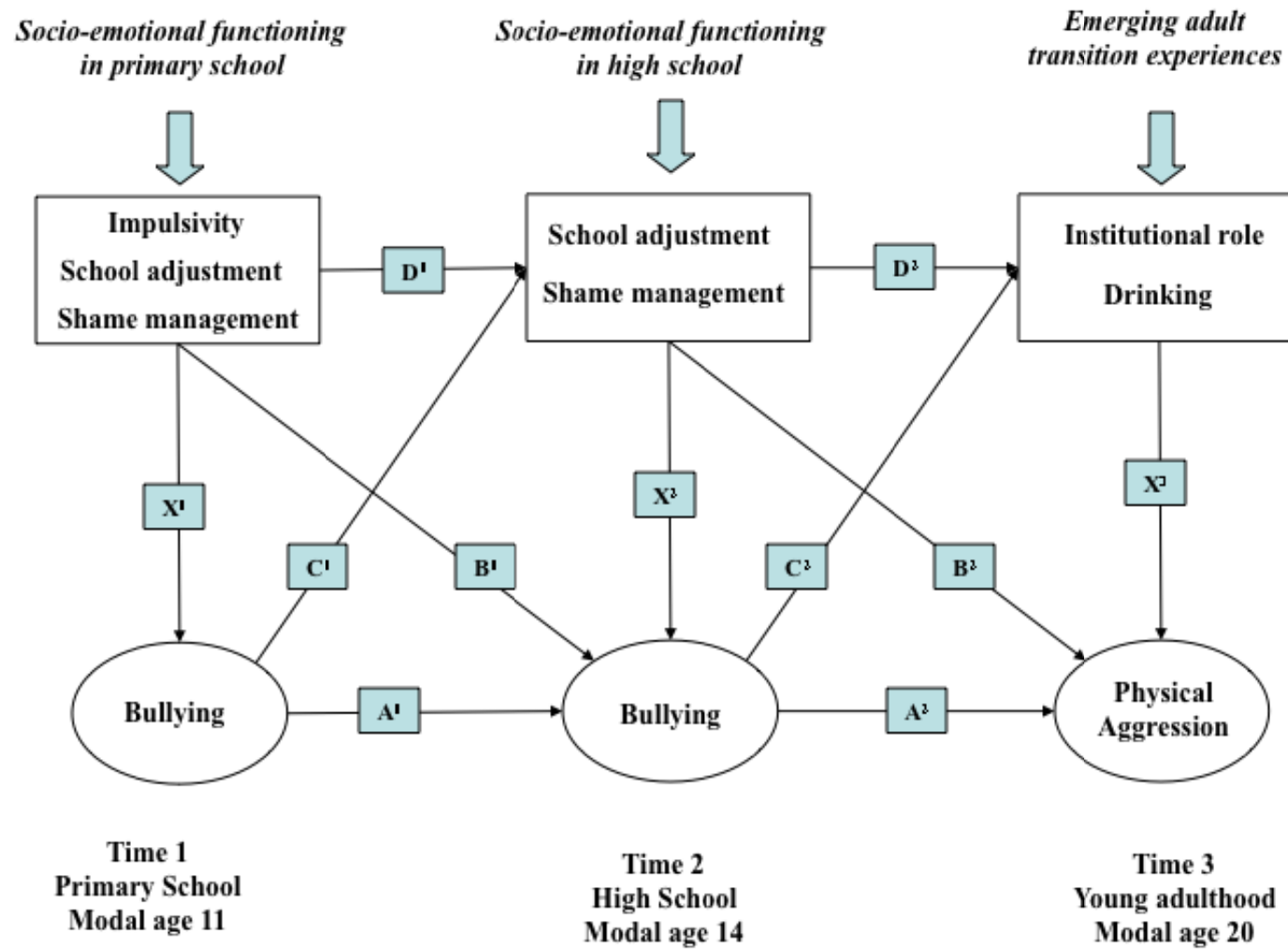


Figure 3.1: Heuristic model of variables in the study and relationships between them

Set A. Direct effects: Distal vs. proximal influences on aggression in early adulthood

Question 1: To what extent do bullying and socio-emotional functioning during school directly predict adult aggression?

The longitudinal literature reviewed in Chapter 1 showed that there are persistent individual differences in aggression from childhood to early adulthood. The most and least aggressive children and adolescents are likely to become the most and least aggressive young adults. It is therefore likely that young people who bullied other students during primary school and high school will be at increased risk of physical aggression during emerging adulthood. The *A* paths illustrate this continuity in behaviour across developmental periods, from bullying at Time 1 to bullying at Time 2 to aggression at Time 3. Moreover, on the basis of evidence reviewed in the current chapter, it is possible that the other distal measure of socio-emotional functioning—impulsivity, shame management and school adjustment—might in some way lead to adult aggression, beyond the effects of earlier bullying.

Thus, this question aims to test the strength of the direct distal links represented by the *A* and *B* paths for predicting adult aggression. Does school bullying predict adult aggression? Are persistent bullies more likely to be aggressive adults than adolescent-onset bullies? Do the socio-emotional variables retain any predictive power for adult aggression once measures of bullying are controlled?

Despite the strength of these influences from the past, longitudinal studies also show that there is an overall decline in the prevalence of aggression at the population level during emerging adulthood. Furthermore, trajectory analyses reveal significant heterogeneity in patterns of continuity and change at this time. Developmental

approaches suggest that, in attempting to understand these patterns of continuity and discontinuity, it is important to consider the influence of experiences proximal to the emerging adulthood transition as well as distal risk factors from the school years. That is, what is the significance of the X^3 link for the A paths? This gives rise to the second research question.

Question 2: Do drinking and institutional role have any additional effects on aggression? If so, are such effects additive or interactive with bully trajectory group?

In Chapter 2 I integrated concepts from the emerging adulthood field with findings from longitudinal studies of problem behaviour to consider how drinking and institutional role (employment-oriented vs. university-oriented) during emerging adulthood might function to promote both continuity and discontinuity in pathways of aggressive behaviour from childhood. This literature confirmed that level of drinking and work/study transitions after the end of secondary school (represented by the X^3 paths in Figure 3.1) can exert developmentally proximal effects upon the course of aggressive behaviour from childhood. Importantly, however, these effects may be conditional, differing depending upon the patterning and severity of prior trajectories of aggressive behaviour. As initially outlined at the end of Chapter 1, and discussed in more detail in subsequent chapters, there are three possible effects to consider with regard to the significance of drinking and/or institutional role for adult aggression.

First, the Time 3 transition experiences may have little effect on concurrent aggression once earlier measures of bullying (the A paths) are taken into account. That is, adult aggression will be mostly predictable from measures of child and/or adolescent ‘risk’. The second possibility is that any effects of drinking and/or institutional role for aggression will be additive with earlier predictors, applying in similar ways to all young people. For instance, the social norms and settings surrounding heavy drinking might carry some degree of risk of aggression for *all* emerging adults, regardless of their prior

aggressive tendencies. In this situation, the transition experiences would account for some additional variance in Time 3 aggression over and above the effects of past trajectories of bullying. Third, it is possible that the transition experiences will constitute ‘turning points’, acting to either open up or close off pathways to adult aggression for those who were bullies during the school years. Therefore, I test whether any positive or negative effects of drinking and/or institutional role differ in magnitude or direction for members of different bully trajectory groups.

Having established the salience and nature of direct links between bullying and socio-emotional functioning from childhood and adult aggression, the second set of questions are designed to discover the intervening processes underlying such relationships.

Set B. Indirect effects: Mediated pathways from childhood bullying to adult aggression

Question 3: What are the mediated longitudinal pathways linking school bullying with adult aggression?

What are the ways in which continuity in socio-emotional functioning over the transition from primary school to high school indirectly relate to adult aggression? The current chapter provided a theoretical background for two main ways in which relationships between socio-emotional functioning and bullying during school might continue to influence adult aggression. As suggested by the ‘distal’ model, one possibility was that socio-emotional factors would be directly linked to adult aggression via the *B* paths, a set of links established by the first set of questions. Two further possibilities exist. First, there is evidence supporting the situation in which the effects of poor behavioural/emotional regulation and poor school adjustment for adult antisocial behaviour primarily operate indirectly, relating to adult problem behaviour by the way

in which they increased bullying at earlier ages. Second, the ‘proximal’ model suggested that individual differences in functioning during school would be realised in different levels of drinking and different institutional roles during early adulthood, with these experiences exerting the proximal effect upon aggression. In other words, well-functioning, non-bullying adolescents will select themselves into sets of post-high school experiences that facilitate continued positive adaptation, and troubled adolescents will tend to encounter post-high school experiences that contribute to continued aggression.

Although the specific underlying links may differ, both these accounts emphasise the centrality of the high school period as the critical mediating link in the chain of events from childhood to adulthood. Thus, question 3 considers whether relations between childhood bullying and subsequent adult aggression will be mediated by aspects of regulatory control and school adjustment that relate to each other and show continuity across childhood and adolescence. For example, might the A^2 path, linking adolescent bullying with adult aggression, be dependent upon relationships between Time 1 and Time 2 school adjustment and shame management represented by the $D^1 - X^2$ path? Moreover, I consider the extent to which these mediated links will operate via the early adult transition experiences. For instance, might poor school adjustment increase the likelihood of heavy drinking at Time 3? Does continuity in maladaptive shame management between primary school and high school (the D^1 path) set the foundation for transitions into different post-high school institutional roles, and does this occur via the D^2 path, or indirectly via bullying (the C^2 path)? Overall, just as the continuity from bullying to aggression could be mediated via the B paths, so too might relationships between other Time 1 and Time 2 measures and Time 3 aggression operate via the C and D paths.

Question 4: To what extent are the mediated pathways from childhood the same or different across the four bully trajectory groups?

Question 3 pertains to mediated relationships estimated at the sample level. However, there is an important caveat to the interpretation of such models. If responses to drinking and institutional role *do* differ across different groups of former bullies, might it not be further possible that the earlier links in the causal chain of events that select people into different life situations might also differ across bully trajectory groups?

A developmental systems approach expects diversity in people's experiences and outcomes, suggesting that certain sets of intertwined personal and contextual factors lead some children into antisocial behaviour, whereas other children have the personal resilience or social resources to buffer the consequences of negative experiences. Consistent with this perspective, the developmental criminology and psychopathology literatures offer many examples of one set of distal risk factors culminating in different outcomes, or different sets of distal risk factors in the same outcome, amongst different population subgroups (Beyers, Loeber, Wikström, & Stouthamer-Loeber, 2001; Lawrence, 2007). For instance, although Moffitt's life-course persistent and adolescent-onset delinquents both engage in many of the same sorts of antisocial acts during adolescence, these shared outcomes between the groups are preceded by quite distinct sets of risk factors (Moffitt, 1993; Moffitt & Caspi, 2001). The implication is that the same *pathways* to adult aggression may not apply to all antisocial trajectory groups.

Therefore, I consider whether the configurations of bullying and socio-emotional functioning that lead to aggression at the sample level might have distinctive consequences later in time for members of different bully trajectory groups. For example, might poor school adjustment be more strongly related to educational failure for persistent bullies? Might heavy drinking during adulthood be unrelated to earlier

difficulties with, say, impulsivity for young people who were not bullies at all during school? In other words, it might be possible that some distal risk factors will be indirectly associated with aggression for one bully trajectory group but not others. Gaining an understanding of potential group differences in pathways is central to understanding pathways from school bullying to adult aggression more generally. By mapping both normative and non-normative developmental sequences, we may begin to identify points at which intervention efforts will have the most developmental leverage.

The next chapter outlines details of the sample, procedures, measures, and analytic approach. Results of analyses to address the research questions outlined here are presented in Chapters 5 to 8.

CHAPTER 4:

METHOD

This first part of this chapter describes the characteristics of the sample and data collection procedures at each wave. The second part reports attrition analyses, and outlines procedures used to handle missing data. Measures used are described in the third section. In the final section I outline the analytic strategy in Chapters 5 to 8.

Sample and procedures

Background: The ACT education system

Primary school in the Australian Capital Territory begins at grade 1 (the year a child turns 6) and concludes at grade 6 (age 12). In most Australian states, secondary schooling comprises grades 7 to 12, and is compulsory until year 10 (age 15). However, the secondary school system in the ACT is different to other Australian states and territories. In the rest of the country, all the high school grades are completed at one institution. In the ACT, however, students attend high school only from grade 7 until grade 10. The two senior high school grades, 11 and 12, are completed at secondary ‘colleges’ located on completely different campuses. The second wave of data for the present study, however, was collected before this change, while all the children were still at high school. The oldest participants at Time 2 were 15 years old and in grade 10.

Sample

The original Life at School sample was drawn from children attending 22 public and ten private primary schools in Canberra, ACT. At this time, children ranged in age from 9 to 13 years old, with a modal age of 10 years old. The children were in grade 4 to grade 7: 23 children were in grade 4; 65 were in grade 5; 60 were in grade 6; and 3

were in grade 7³. When Time 2 data were collected three years later in 1999, attendance was spread across 17 public and 13 private high schools within Canberra and children were in grades 7 to 10. Their ages at Time 2 ranged from 12 to 15 years old, with a modal age of 14. At Time 3, the age range was 18 to 22 years old, with a modal age of 20 years old. All participants had finished high school and were occupied in a diverse range of educational and employment roles. Patterns of work and study at Time 3 will be discussed when the construction of the institutional role variable is described.

Parent questionnaires were distributed at each wave of the study. At Time 1, the parent/guardian who most frequently engaged with the child was invited to complete the questionnaire, with the majority of responses received from mothers (mothers = 131; 87%; fathers = 20; 13%). Information regarding socio-economic status and family ethnicity was derived from Time 1 parent questionnaires. Parents' education was used as a proxy for socio-economic status. In 1996, 41% of persons in the ACT had some non-school qualifications, including 23% with a Bachelor degree or higher (Australian Bureau of Statistics, 1997). In comparison, the current sample was quite advantaged: overall, 75% of the responding parents had some post-secondary education and 42% had graduated from university. Thirty-nine percent of the 131 mothers had a university degree, 34% had some education beyond high school, and 27% had high school or lower education. The education level for the 20 fathers was somewhat higher: 12 (60%) had obtained a university degree, 6 (30%) had some post-secondary education, and only 2 had a high school or lower education. Most of the sample of parents (73%) were employed, 54% of these working full-time and 46% working part-time. Of the 131 mothers, 110 (70%) were in the workforce (45% working full-time and 55% working

³ As noted, primary school in the Australian Capital Territory concludes at grade 6, and high school includes grades 7 to 12. The inclusion at Time 1 of three grade 7 students is due to the fact that two of the schools in the study incorporated all the primary grades (kindergarten to grade 6) and high school up to grade 10 on the same campus. One of the grade 7 children was attending a private school run by the Uniting Church of Australia, and the other two were students at a public school with a special English-French bilingual program up to grade 10.

part-time), 7 (5%) were self-employed, and the remaining 30 (23%) were engaged in home duties or occupied outside the paid workforce. The 20 fathers were naturally far more likely to be working full-time: 18 (90%) were in a full-time job and two were self-employed.

Data on ethnicity was available for 88% (N = 133) of the sample. The vast majority of the parents selected their child's ethnic background as European Australian or British (N = 112, 84% of the non-missing data and 75% of the total sample), and most of the remainder were of either continental European background (N = 9, 6% of the total sample) or mixed Australian and continental European background (N = 6, 4%). Two parents selected mixed European and Asian-Pacific ethnicity, one Vietnamese, and one Pakistani. All parents with the exception of the Vietnamese family indicated that their child usually spoke English at home. In 1996, 79% of ACT residents were born in Australia, New Zealand, or England, less than 3% were born in Asian nations such as China and India, and just over 80% spoke English at home (Australian Bureau of Statistics, 1997). The ethnicity of the sample therefore reflects the composition of the wider ACT population, but does over represent those of Anglo-Australian and western European background. This is another indicator of the relative socio-economic advantage of families in the sample, even by the higher-than-average ACT standards.

Procedures

At the beginning of the study, participating primary schools were visited by Eliza Ahmed, the principal researcher (Ahmed, 1999, 2001). She explained the purpose of the study to the school principals and arranged to invite the parents of all children in grades 4 to 7 to participate in the project. Parents received a consent form and a letter describing the study's purpose and procedures, the voluntary nature of participation, and the confidential nature of the data. If the parents were willing for themselves and

their child or children to participate, the consent form was completed and returned to the school.

The Time 1 child questionnaire was completed during school hours. Students whose parents had given consent were taken to a quiet classroom, where the researcher explained the purpose of the study and reassured them of anonymity and confidentiality. Students received two questionnaires: one to complete themselves, and one to take home for their mother or father in a self-addressed envelope. To ensure that the responses remained anonymous, names were not recorded on the children's questionnaires. Instead, matching identification numbers were used to link the child and parent responses. These identification numbers were unique to each parent-child pair and were retained throughout all three waves of the study. In order to maintain confidentiality, the researcher administered the session and children's responses were not shown to any of the school teachers or other students.

Instructions for parents' responses were contained within the questionnaire booklet. Parents were asked to complete their questionnaire with the son or daughter in mind who had completed the corresponding child survey. The last page of the questionnaire outlined the researchers' plans to conduct another wave of data collection when children reached high school. If they and their child were willing to be involved in future research, parents provided their name, address and telephone number. Parents were given two weeks to place their completed questionnaire in a sealed box in the schools' main office.

At Time 2, parents of students who had volunteered to participate in follow-up research were mailed two questionnaires: one for their participating son or daughter, and one for themselves. An introductory letter thanked the parents and children for their prior participation and reminded them of the purpose of the study and its importance.

They were reassured of confidentiality, and instructed to return both questionnaires in the reply-paid envelopes provided.

At Time 3, seven years had passed and students were no longer in school and not necessarily living in the family home. In order to locate participants, a letter of introduction was sent in March 2005 to all parents who had provided contact details at Time 1, regardless of whether they had responded at Time 2 or not. Enclosed with the parents' letter was a letter for their son or daughter. Both parent and child letters acknowledged prior participation, provided information about the study procedures, and invited participation in the follow-up study. If they did not wish to be involved further, parents and/or children informed the researcher of this by reply-paid letter, and their names were removed from the database. As children's names were not recorded at Time 1 or Time 2, their letter was simply addressed to 'Life at School Participant', care of their mother or father. Parents were asked to pass the letter on to their son or daughter, and to return an attached change of address form if their child had moved away. Attached to the child's letter was another copy of the change of address form, which included an opportunity for them to provide their name to make data collection more straightforward. As all participants were by this time over 18 years of age, previous ethical restrictions over recording of children's names did not apply.

Time 3 questionnaires were mailed to participants in December 2005, several months after the initial contact. Parent and child questionnaires were sent in separate envelopes. The letter was addressed personally to the child where their name and address were known; if unknown, the letter was addressed to 'Life at School Participant' care of their mother or father's address. Both questionnaire booklets provided information about the study, including details for procedures of anonymity and confidentiality. In order to maintain anonymity, participants were asked not to record their name on the questionnaire. They were informed that, as their name would not be

stored with their responses, they could not be identified from the data, and that responses would be viewed only by the researcher. Further instructions reassured participants that there were no right or wrong answers to any of the questions. Parents were also reminded to complete the questionnaire with the son or daughter in mind who had been involved at Time 1 and Time 2. The last page of both parent and child questionnaires invited participants to be involved in future research, and provided the opportunity to give contact details if they wished. Reply-paid envelopes were provided for return of questionnaires.

Attrition and missing data

Attrition

At Time 1, 571 parent-child pairs provided contact details for follow-up research. As described above, attempts were made at Time 3 to contact all 571 families from the first wave of data collection. After the initial letter of introduction was posted, 19 parent-child pairs declined further involvement, 73 returned a completed acceptance form, 99 letters were returned to sender, and 380 did not respond. A search for the returned-to-sender and non-responding names (N=479 in total) was subsequently undertaken within the latest Electoral Roll for the ACT⁴. This search confirmed 218 addresses and uncovered new addresses for 85 families. Addresses for the remaining 176 were either not found or not able to be confirmed with certainty. Time 3 questionnaires were not posted to these 176 parent-child pairs.

Questionnaires were posted to 376 families in December 2005. One month later, reminder letters were posted to 322 children and 278 parents. Participants who had still

⁴ Electoral enrolment, and voting in state and federal elections, is compulsory for Australian citizens over the age of 18. The Commonwealth Electoral Roll is a publicly available document that provides name, date of birth, and residential address for all people enrolled to vote. Approximately 93% of the population is enrolled.

not responded were telephoned during February and March, and fresh questionnaires were sent to 81 children and 77 parents who said that they had lost it. In total, Time 3 questionnaires were received from 185 children and 224 parents. Of the remaining children, a further 34 refused to participate, a further 26 were returned to sender, and 131 were not returned.

Of the 571 parent-child pairs at Time 1, 354 (62% of the Time 1 sample) participated at Time 2, and there were 177 valid child questionnaires at Time 3 (31% of the Time 1 sample; 50% of the Time 2 sample). The eight invalid cases turned out to not be the same child who had been involved at earlier waves.

To be included in the current sample, participants were required to have data across each wave (Time 1 to Time 3). That is, if a participant had data at each wave of the study, even if some items were missing, the participant was included in the sample. If, however, data were completely absent at any time point, the participant was excluded from the sample. There were 151 children who met this criterion, including 63 men and 88 women. This represents 27% of the Time 1 sample, and 43% of the Time 2 sample. The 26 participants who lacked Time 2 data were excluded from the sample.

A series of t-test, chi-square, and log-linear analyses were performed to examine selective attrition across the three waves of the study. These analyses were designed to establish whether participants who dropped out of the study after Time 1 or Time 2 differed from those who remained at Time 3 with regard to the variables used in the present study (such as bullying, shame management and so on), as well as child age, parental education and parental employment. Parental education and employment were included because of their association with socio-economic status. Based on other longitudinal studies of aggression and problem behaviour it was expected that participants with higher status would be more likely to remain in the study.

Analyses were carried out in three stages, and findings are summarised in Table 4.1⁵. In the first stage, I compared Time 1 scores for the participants who were retained at Time 3 (N=151) with the remainder of the original Time 1 sample (N=420).

Compared with the Time 1 sample, participants who remained at Time 3 were more likely to have a parent with a university qualification ($\chi^2(1)= 3.7, p< .05$) and were less likely to report academic difficulties in primary school ($t(563)= 2.2, p>.05$). Time 3 participants were also more like to be female than those who did not continue to Time 3, although this difference did not reach significance ($\chi^2(1)= 2.9, p=.09$).

In the second stage, factors associated with dropping out after Time 1 or Time 2 were examined. A comparison of Time 1 scores for participants who did not continue to Time 2 (N=190) with those who were retained (N=354) showed that dropping out after Time 1 was associated with greater self-reported academic difficulties in primary school ($t(536) = 2.9, p<.05$). A comparison of Time 1 and Time 2 scores for participants who dropped out after Time 2 (N=203) with those who were retained at Time 3 (N=151), however, showed that participants who left the study after Time 2 were less likely to have a parent with a university qualification ($\chi^2(1)= 3.9, p<.05$), and more likely to be male ($\chi^2(1)= 3.7, p<.05$).

Thus, attrition after Time 1 was predicted by self-reported academic difficulties in primary school, and after Time 2 was associated with less parental education and male gender. These results suggest that participants who remained in the study at Time 3 were likely to be of higher socio-economic status and to have experienced fewer academic difficulties in primary school, than those who dropped out. They were also more likely to be female. Several studies show that lower socio-economic status predicts aggression in adolescence and young adulthood (Farrington, 2007b), and males are widely shown to report more physical aggression than females.

⁵ Note that only parental education, sex, and academic difficulties at Time 1 were significantly associated with attrition in these analyses. Therefore, Table 4.1 presents statistics for these variables only.

Table 4.1: Summary of attrition analyses

Factors associated with attrition from the study	Comparison between Time 3 sample and all drop outs		Comparison between Time 2 sample and those who dropped out after Time 1		Comparison between Time 3 sample and those who dropped out after Time 2		Comparison between Time 3 sample with complete data and those missing Time 2 data	
	Complete Time 3 sample	Total drop-outs	Retained to Time 2	Dropped out after Time 1	Complete Time 3 sample	Dropped after Time 2	Complete Time 3 sample	In Time 3 but missing Time 2 data
N	151	420	354	190	151	203	151	26
Parental education ¹	42%*	33%	36%	30%	42%*	32%	42%	45%
Sex ²	42%*	50%	48%	45%	42%*	52%	42%	46%
Academic difficulties, Time 1	1.70*	1.79	1.73*	1.84	1.70	1.75	1.70	1.79

* significant difference between retained participants and drop-outs

¹ percent of responding parents who attended university

² percent males

Furthermore, children who struggle academically may be more likely to bully their peers (Nansel, et al., 2001; Stein, et al., 2006), and engage in antisocial behaviour at later ages (Kosterman, et al., 2001; Lacourse, et al., 2008). It is therefore likely that the current sample was under-representative in terms of aggressive individuals. Hence, the variance in physical aggression in young adulthood was possibly lower than it would have been if all participants had been retained.

Finally, analyses were carried out to assess the impact on the sample of excluding the 26 individuals who completed the Time 3 questionnaire but were absent at Time 2. A comparison of Time 1 and Time 3 scores for these 26 individuals and the rest of the Time 3 sample (N=151) did not reveal any significant differences. Thus, although exclusion of this group reduced the sample size, it did not appear likely to bias the sample in any way.

Missing data

As stated, the 151 participants in the final sample were required to have data present for each of the three waves. However, ten participants were missing data on one or two measures. SPSS MVA (Missing Values Analysis) was used to investigate the patterns of missing data, and to test whether the distribution of missingness was random or predictable. Two of the ten participants were missing data on two measures, and the other eight were missing data for one measure only, for a total of 12 missing data points (0.5% of the entire data set). The missing data were spread over nine variables, and in each case missing values represented less than 2% of scores for that variable. Little's MCAR test returned a nonsignificant result ($\chi^2(82)=96.6$, $p=.13$), indicating that the probability that the pattern of missing data diverged from randomness was greater than .05. As it could therefore be inferred that the data were missing completely at random, substitution of missing scores was warranted. This was done using the EM (expectation maximisation) method available within SPSS MVA. Analyses reported in Chapters 5, 6,

7 and 8 were repeated using the 141 complete cases only, and results were almost identical.

Measures

The variables used in this longitudinal analysis span a ten-year period from middle childhood to young adulthood, and reflect three distinct developmental periods: middle childhood and the mid- to late primary school years (ages 8 to 12), early adolescence and the early high school years (ages 12 to 15), and young adulthood and the immediate post-high school years (ages 18 to 22). While every effort was taken to maintain consistent measures across the three waves of the study, it was not always possible or meaningful to do this. For instance, some measures used at Time 1 were not included in the Time 2 assessment, and the wording of others was slightly altered. Thus, different measures are sometimes grouped within the same construct at the three different ages, and in some instances the construction or wording of measures is slightly different at different ages.

Table 4.2 summarises the measures used in the present study. The upper rows outline measures used to assess bullying and socio-emotional functioning at Time 1 (primary school) and 2 (high school), showing which variables were retained across both time periods, and where changes were made. The lower panels show measures used to assess drinking, institutional role and physical aggression at Time 3 (emerging adulthood). Means, standard deviations, and Cronbach's alpha reliability estimates (where applicable) for Time 1 and Time 2 measures are shown in Table 4.3. The Time 3 scale statistics will be described later in the chapter.

All the individual items that make up each measure, for each wave, may be found in Appendix A. The Time 3 questionnaire is reproduced in full in Appendix D⁶.

⁶ The earlier questionnaires may be found at <http://demgov.anu.edu.au/building/LifeatSchool1996.pdf> (Time 1) and <http://demgov.anu.edu.au/building/LifeatSchool1999.pdf> (Time 2).

Table 4.2: Summary of measures used at Times 1, 2 and 3

Time 1 measures- primary school, modal age 10			Time 2 measures- high school, modal age 14		
Measure	Source	Response format	Measure	Source	Response format
Bullying					
Bullying (frequency over past school year)	2 items from the PRQ (Rigby, 1998)	5-point scale (‘Never’ to ‘Several times a week’)	Bullying (frequency over past school year)	(Same as Time 1)	
Socio-emotional functioning					
Shame management					
Acknowledgement	4 item MOSS-SASD subscale {Ahmed, 2001)	Yes/No	Acknowledgement	5 item MOSS-SASD subscale	Yes/No
Displacement	5 item MOSS-SASD subscale	Yes/No	Displacement	(Same as Time 1)	
Impulsivity					
Impulsivity	3 items from Eyesenk’s Junior Impulsiveness Scale (Eyesenk, 1977)	4-point scale (‘Disagree a lot’ to ‘Agree a lot’)	(not used at Time 2)		
School adjustment					
Academic difficulties	3 items from Groube’s Daily Hassles Scale (1987)	3-point scale (‘Never’ to ‘A lot of the time’)	Academic difficulties	(Same as Time 1)	
Liking for school	The Smiley Face Scale (Mooney, 1991)	5-point scale (‘Ugh, I hate it’ to ‘Great, I love it’)	School connectedness	7 items adapted by Morrison (2006) from Tajfel (1972) and Tyler and Blader (2000).	4-point scale (‘Disagree a lot’ to ‘Agree a lot’)

(Table continues next page)

(Table 4.2 continued)

Measures used at Time 3 (emerging adulthood, modal age 20)		
Measure	Source	Response format
Physical aggression		
Physical assaults, threats of violence, and getting into fights over the last 12 months	Derived from a series of items relating to perpetration of aggression	For each type of aggression, 4 point scale ('Never' to 'three times or more')
Transition experiences		
Drinking		
Average weekly frequency of drinking over the past 12 months	1 item from the 2004 National Drug Strategy Household Survey (Australian Institute of Health and Welfare, 2007)	7 point scale ('every day' to 'less often')
Institutional role		
Participation in university by the Time 3 assessment	Derived from a series of items relating to employment and study since leaving school	-

Table 4.3: Means, standard deviations, and reliability estimates for Time 1 and Time 2 measures

Time 1- primary school, modal age 10				Time 2- high school, modal age 14			
Measure	Mean (SD)	Number of items	Cronbach α	Measure	Mean (SD)	Number of items	Cronbach α
Bullying	0.57 (.63)	2	.72	Bullying	0.60 (.64)	2	.79
Shame acknowledgement	1.85 (.21)	4	.69	Shame acknowledgement	1.77 (.26)	5	.83
Shame displacement	1.21 (.22)	5	.72	Shame displacement	1.11 (.17)	5	.72
Impulsivity	2.81 (.73)	3		-	-	-	-
Academic difficulties	1.71 (.36)	3	.54	Academic difficulties	1.82 (.43)	3	.65
Liking for school	3.76 (.86)	1	-	School connectedness	2.82 (.66)	7	.89

Time 1 and Time 2 measures

Socio-emotional functioning

Impulsivity (Time 1 only)

Impulsivity was measured with three items from Eysenck's Junior Impulsiveness Scale (Eysenck & Eysenck, 1977). The items were (1) I often get involved in things I later wish I could get out of; (2) I often get into trouble because I do things without thinking; and, (3) I often do and say things without stopping to think. Responses were made on a four-point scale, ranging from (1) disagree a lot to (4) agree a lot. Responses were averaged to create a scale, with higher scores indicating a greater tendency to be impulsive. Internal consistency was acceptable (Cronbach $\alpha = .68$). Means and standard deviations are shown in Table 4.3.

School adjustment

School adjustment comprised two constructs: the degree to which participants felt they were meeting the demands of schoolwork, and the quality of their perceived socio-emotional bond with the school environment. The measure of perceived academic difficulties was the same at Time 1 and Time 2, while different measures were used to tap the socio-emotional construct in primary school and high school. In primary school, the measure used is termed 'liking for school' and in high school 'school connectedness'. School connectedness provided additional information about identification with the school context during high school, which is of particular relevance to understanding educational outcomes at Time 3, as well as involvement in deviant behaviour such as heavy drinking (Lonczak, et al., 2001).

Academic difficulties (Time 1 and Time 2)

The academic difficulties scale was based on three items selected from Groube's (1987) Daily Hassles Scale. The original scale was developed to assess chronic everyday stressors experienced by Australian children and adolescents. The items used in the current study represented the degree to which children were bothered by their perceived failure to meet various academic demands. These items were (1) Failing a test or exam; (2) Doing worse in some schoolwork than I expected; and (3) Failing to do my homework. Children indicated how often they had to deal with these hassles on a three-point scale, (1) never; (2) sometimes; (3) a lot of the time. The measure of academic difficulties was the mean of these three items, with higher scores indicating greater difficulties. Internal consistency was acceptable at both Time 1 ($\alpha = .54$) and Time 2 ($\alpha = .65$).

Liking for school (Time 1)

Liking for school was measured with the Smiley Face Scale (Mooney, Creeser, & Blatchford, 1991). This scale is a simple pictorial representation of five faces with expressions ranging from happy, though neutral, to sad. This measure may be found in Appendix A. Attached to each face is a thought bubble that describes a corresponding level of satisfaction with school. For example, the bubble attached to the happiest face contains the words, 'Great, I like it' and the saddest 'ugh, I hate it'. Children were asked to colour in the face which best represented how they felt at school. The measure ranged from 1 to 5. Responses were reverse-coded such that higher scores represented greater liking for school.

School connectedness (Time 2)

School connectedness was measured with seven items adapted from Tajfel (1972) and Tyler and Blader (2000). These studies present social-identity based models

of social relations. Within this perspective, degree of commitment to a social group—or connectedness—is determined by how members feel about themselves as a) individuals within the group (the ‘I’), and b) how they feel about the group as a collective (the ‘we’). Strong commitment to the group is found when individuals feel that they are respected as members of the group, and also feel proud to be members of the group. Connectedness is also characterised by positive emotions about group membership.

Extending this notion to the school environment, strong connectedness would be indicated by a sense of pride in being a student, feeling respected at school, and feeling positive about attending school. The seven items tap these dimensions. Pride was assessed with three items: (1) I feel very proud of being a student at my school, (2) I often speak proudly about being a student at my school, and (3) What my school expects is clear to me; respect with one item: (1) I feel valued and respected as a student at my school; and emotional value with three items: (1) I really like being a student at my school, (2) I feel very satisfied going to school each day, and (3) Going to school makes me very happy. Response options ranged from (1) disagree a lot to (4) agree a lot. Correlations between items were fairly strong, ranging from .31 to .77, with a median of .54. Principal components analysis produced a single component solution (Eigenvalue=4.33) that accounted for 61.8% of the variance. Responses were therefore averaged across items to produce an overall scale of school connectedness, with good internal consistency (Cronbach α = .89). Higher scores indicate greater school connectedness.

Shame management

The construct of shame management consists of two variables: shame acknowledgement and shame displacement. These variables were measured with the Management of Shame State- Shame Acknowledgement and Shame Displacement (MOSS-SASD). This instrument was developed by Eliza Ahmed (2001) during the first

wave of the Life at School Project. The MOSS-SASD is a scenario-based measure that is designed to assess children's strategies for managing shame in school bullying situations.

The MOSS-SASD comprises eight hypothetical scenarios in which one child behaves with physical or social aggression towards another. For example:

'Imagine that you have been making rude comments about a student's family. Then you realise that the class teacher heard what you said.'

(See Appendix A for all items and scenarios).

After reading each scenario, ten questions ask children how they would feel if they had been the perpetrator in the situation (eg. 'would you feel ashamed of yourself?'), using a yes/no response format. The items are the same for each scenario. Each item represents a different shame management strategy, of which five are considered characteristic of shame acknowledgement and five characteristic of shame displacement. Responses to each item are therefore averaged across scenarios. The resulting ten subscales represent the components of shame acknowledgement and shame displacement. The five 'acknowledgement' and five 'displacement' subscales are then averaged to form the two overall scales of acknowledgement and displacement.

Only four of the eight scenarios were included in the Time 2 questionnaire. The current study therefore restricts analysis to those four scenarios common to both Times 1 and 2. Moreover, on the basis of Ahmed and colleagues' research, however, some minor alterations were made to some of the shame management items in the Time 2 questionnaire. Therefore, in this study I use a slightly modified version of the original MOSS-SASD. Table 4.4 shows the items utilised at Times 1 and 2, together with the specific adaptive or maladaptive shame management strategy that each item represents.

Table 4.4: Measures of shame acknowledgement and shame displacement: Items used at Times 1 and 2 and the shame management strategies they represent

Item	Used at Time 1/Time 2	Theoretical concepts
Shame acknowledgement items		
1. Would you feel ashamed of yourself?	Time 1 and Time 2	Indicates that the hypothetical event has aroused shame
2. Would you wish you could just hide?	Time 1 and Time 2	Represents a desire to escape from the distressing shame experience by avoiding others
3. Would you feel like blaming yourself for what happened?	Time 1 and Time 2	Indicates a willingness to take responsibility for own behaviour
4. Would you feel angry at yourself in this situation?	Time 2 only	Represents adaptive negative self-evaluation, distress at having behaved in a way that has elicited shame
5. Would you feel like making the situation better?	Time 1 and Time 2	Represents a willingness to restore the damaged social relationship
Shame displacement items		
1. Would you feel like blaming others for what happened?	Time 1 and Time 2	Indicates externalising blame for behaviour
2. Would you be unable to decide if you were to blame?	Time 1 and Time 2	Represents uncertainty about whether one has acted contrary to an ethical norm (Harris, 2001)
3. Would you feel angry in the situation?	Time 1 only	Represents externalised anger
3. Would you feel angry at the student in the situation?	Time 2 only	Represents externalised anger
4. Would you feel like getting back at that student?	Time 1 and Time 2	Represents retaliatory anger
5. Would you feel like doing something else, for example, throwing or kicking something?	Time 1 and Time 2	Represents displacement of anger onto an object or person not related to the source of the anger

Note: Adapted from Ahmed (2001, p. 241).

Acknowledgement

At Time 1, shame acknowledgement was assessed with four of the original five subscales (refer to Table 4.4). The removal of the fifth original item ('Do you think others would reject you?') reflected a need to ensure that the acknowledgement scale represented adaptive emotion regulation (Ahmed, 2006)⁷. At Time 2, a new shame acknowledgement item was added to the questionnaire ('Would you feel angry at yourself?'). As psychometric analyses (reported in Appendix B) confirmed that this item was positively correlated with other acknowledgement items and negatively correlated with displacement items, and loaded on the acknowledgement factor in principal components analysis, it was included in the Time 2 measure of shame acknowledgement.

Displacement

Both the Time 1 and Time 2 measures of shame displacement were based on Ahmed's five original subscales. However, the item 'Would you feel angry in this situation?' was altered in the Time 2 questionnaire to read, 'Would you feel angry at the student in this situation?' As this item was positively correlated with other displacement items and negatively correlated with acknowledgement items, and loaded on the acknowledgement factor, it is assumed equivalent to the Time 1 item.

⁷ Acknowledgement strategies, such as admitting shame and expressing remorse, function to maintain healthy social bonds by prompting reconciliation and forgiveness from others in the environment. Some individuals, however, have a tendency to under-regulate shame that is triggered by wrongdoing and become crippled by feelings of distress and inadequacy. According to theorists (Ahmed, 2001, see p. 235-6), these persistent negative self-evaluations give rise to fear that the self will be rejected and condemned by others. This fear inhibits the individual's capacity to admit blame and take responsibility for wrongdoing. As a result, the relationship with the self is not restored. Such over-acknowledgement therefore represents maladaptive regulation of shame, and is associated with psychological distress (Tangney, 1990). Cross-sectional analysis of the Time 1 data (Ahmed, 2006) showed that high scores on the acknowledgement subscale 'Do you think others would reject you?' was positively related to victimisation and was unrelated to bullying. In contrast, other acknowledgement items were unrelated to victimisation and negatively associated with bullying. Cross-sectional analysis of the T2 data revealed similar patterns. Following Ahmed, this item was therefore removed from the acknowledgement scale.

Psychometric analyses (Appendix B) confirmed the presence of distinct overall indices of acknowledgement and displacement for the current dataset, at both Times 1 and 2. Therefore, scores on the acknowledgement and displacement subscales were averaged following the procedure outlined above to create the overall measures of acknowledgement and displacement at each wave. Internal consistency was good: Time 1 acknowledgement $\alpha = .69$, Time 2 acknowledgement $\alpha = .83$; Time 1 displacement $\alpha = .72$, Time 2 displacement $\alpha = .72$. Higher scores on the acknowledgement scale indicate a greater tendency to acknowledge shame, and higher scores on the displacement scale indicate a greater tendency to displace shame.

Bullying

Bullying is analysed in two ways in the present study. The data analyses make use of a) continuous measures of bullying at Time 1/Time 2, and b) a four-category ‘bully trajectory group’ measure, derived from the continuous measures, that captures stability and change in bullying status across Times 1 and 2.

a) The continuous measure of bullying at Time 1 and Time 2

Bullying was assessed using two items from the Peer Relations Questionnaire (PRQ), a self-report measure developed in Australia (Rigby, 1998). The PRQ is very similar in wording and response format to Olweus’ widely used Bully-Victim Questionnaire (Olweus, 1993b). Children are provided with the following definition of bullying:

We call it bullying when someone repeatedly hurts or frightens someone weaker than themselves on purpose. Remember that it is not bullying when two young people of about the same strength have the odd fight or quarrel. Bullying can be done in different ways: by hurtful teasing, threatening actions or gestures, name-calling or hitting or kicking.

Bullying behaviour was assessed with two ‘global’ items from the PRQ. After reading the above definition, students were asked: (1) ‘How often have you been part of

a group that bullied someone during the last year?'; and (2) 'How often have you, on your own, bullied another child during the last year?' The response format for both items ranged from 1 (never) to 5 (several times a week).

Inspection of response distributions for the bullying items showed that most students who reported bullying others, either in a group or alone, had done so only 'once or twice' or 'sometimes.' Very few reported bullying more often than once a week. This was true at both Time 1 and Time 2. Thus, in order to reduce skewness and the impact of outliers (Tabachnick & Fidell, 2007), and following the example of other bullying researchers (for example, Kaltiala-Heino, et al., 2000; Nansel, et al., 2001; Solberg & Olweus, 2003), the upper three response options were collapsed for both items, resulting in a scale of 1 (never) to 3 (sometimes or more often). Scores were then recoded to begin at 0, and the two items were averaged to create the bullying scale (Time 1 $r = .62$, $\alpha = .72$; Time 2 $r = .74$, $\alpha = .79$), with a range of 0 to 2. Means and standard deviations are shown in Table 4.3.

b) The categorical bully trajectory group measure

Drawing on concepts from the longitudinal study of offending and antisocial behaviour, four longitudinal bullying groups were created on the basis of participants' Time 1 and Time 2 scores on the continuous bullying measure⁸. Developmental researchers commonly use statistical or normative criteria to identify children with elevated behaviour problems at each measurement point, and then develop classification rules to create groups characterised by different levels of behaviour over time. In the Dunedin study, for example, Moffitt (1996) labelled males as 'antisocial in adolescence' if they fell more than one standard deviation above the average score for

⁸ Group-based trajectory modelling is increasingly utilised to identify clusters of individuals with distinct developmental trajectories of behaviour over time (Nagin & Tremblay, 2005). However, this approach is not suited to datasets in which the outcome of interest is only assessed at two points in time, as is the case with bullying in the present study.

the male sample on self-reported delinquency. In concrete terms, this meant that they had a) committed nine or more different illegal acts at age 15; or b) self-reported having committed 12 or more different illegal acts at age 18.

A similar strategy was used in the present study. The first step was to select an appropriate cut-point in the continuous bullying measure to divide the sample into ‘bullies’ and ‘non-bullies’ in childhood and adolescence. One option would have been define as ‘bullies’ participants who reported *any* bullying at Time 1 or Time 2, which would include any participant who scored above zero on the continuous measure. However, studies on developmental taxonomies of antisocial behaviour generally aim to distinguish between children with elevated or pervasive levels of problem behaviour and children who display less frequent or severe behaviour at each measurement point. Therefore, scores of one or greater, or the 75th percentile, were chosen to designate participants as ‘bullies’ or ‘non-bullies’ in childhood and adolescence⁹. As the continuous measure was created by averaging across the two bullying items, scores of less than one indicate that the bullying, either individual or group-based, had occurred only ‘once or twice’ during the last school year. Scores of one or greater indicate that the participant had bullied others at least ‘sometimes or more often.’ Thus, this cut-point captures children and adolescents who were engaging in repeated aggressive behaviour. This is consistent with a key defining feature of bullying as behaviour involving harmful actions that are repeated over time (Olweus, 1978; Smith, 2004). While it would have been interesting to explore the developmental consequences of ‘low-level chronic’ bullying (children scoring more than zero but less than one over time, or reporting persistent levels of very occasional bullying), the sample size in the

⁹ Scores of one or greater fall about 0.65 of a standard deviation above the mean at both Time 1 and Time 2. This is little short of the one standard deviation above the mean used in several longitudinal aggression studies (for example, Moffitt, et al., 1996). However, a more restrictive cut-off (for example, scores of more than 1.5, or the 90th percentile) would have halved the sizes of the ‘bully’ groups at Time 1 and Time 2, resulting in developmental categories too small to be statistically viable. Considering the sample size, the lower cut-point was preferred in order to maximise power for the longitudinal analyses.

current study did not permit such a comparison. Furthermore, preliminary analyses suggested that children in this group did not report significantly worse functioning than those who did not report bullying at any time in the study.

In the second step, four groups were identified as follows:

Non-bullies: Participants who scored less than one on the bullying measure in both primary school (Time 1) and high school (Time 2). There were 78 individuals who met these criteria (52% of the sample), including 23 males and 55 females.

Child-limited bullies: Participants who met the criteria for bullying in primary school but not in high school. This group numbered 26 (17% of the sample), including 11 males and 15 females.

Adolescent-onset bullies: Participants who did not meet the criterion for bullying in primary school but were classified as bullies in high school. This group numbered 24 (16% of the sample), including 12 males and 12 females.

Persistent bullies: Participants who were classified as bullies in both primary school and high school. There were 23 persistent bullies (15% of the sample), including 17 males and six females.

Time 3 measures

Drinking frequency

Frequency of drinking alcohol was assessed with one item: 'In the last 12 months, how often did you have an alcoholic drink of any kind?' Response options were (1) every day; (2) 5-6 days a week; (3) 3-4 days a week; (4) 1-2 days a week; (5) 2-3 days a month; (6) about 1 day month; (7) less often. This item was drawn from the 2004 National Drug Strategy Household Survey (Australian Institute of Health and Welfare, 2007), a comprehensive national survey of almost 30,000 Australians aged 12 years and over. Responses were reversed such that higher scores indicated more

frequent drinking. The mean score was 3.46 (standard deviation = 1.43). About half the sample drank at least once a week or more often. This is consistent with national rates reported by the AIHW, which found that 49.5% of people aged 20-29 years old drank at least weekly, and 25% of 14 to 19 year-olds drank at least weekly.

Institutional role

Overview of participants' post-high school study and employment experiences

The post-high school employment and study experiences reported by the participants in this study reflect the diversity of options available to emerging adults in 21st century Australia. Even in this small sample, the crosstabulation of all possible work and study circumstances (eg. full time work, part-time study, apprenticeship, and so on) produced more than 20 distinct combinations. More broadly, the participants' recent experience was characterised by a high rate of high school completion (93% completed year 12), followed by diversification into a variety of post-secondary study and employment roles.

Panels A to C in Table 4.5 summarise employment and study situations for the whole sample. As shown in Panel A, the majority of participants had undertaken some post-high school study or training. Just over half (51%) had undertaken university study, and 29% had undertaken a non-university course. Only 32 (21%) had not embarked on post-secondary training at some point. Most of the sample were studying or training at the time of data collection. This included 71 university students (47%) and 23 individuals (15%) pursuing vocational education/training (VET), including 18 undertaking a course at CIT and five completing apprenticeships.

As the majority of participants had undertaken some form of post-secondary training, so too were the majority in the workforce (panel C, Table 4.5). The 137 participants who were working included 95 (63% of total sample) individuals in

Table 4.5: Summary of work and study variables: N (% of total sample)

A: Educational qualifications			
High school only	32 (21%)		
VET certificate/course	33 (22%) ^a		
University degree	9 (6%) ^b		
B: Current study and training			
	Full time	Part time	Total
Not studying	-	-	57 (38%)
VET	15 (10%) ^c	8 (5%)	23 (15%)
University	68 (45%)	3 (2%)	71 (47%)
C: Current employment			
	Mean weekly hours		
Not working	14 (9%)	-	
Part-time/casual	95 (63%)	19.4 (10.4)	
Full-time	42 (28%)	40.4 (10.9)	

^aIncludes 15 individuals currently studying

^bIncludes 5 individuals currently studying

^cIncludes 5 individuals completing apprenticeships in workplaces with some classroom study

part-time or casual jobs and 42 (28%) in full-time jobs. Table 4.6 shows how participants combined work with study. Overall, university students were more likely to be working in casual/part-time jobs, and non-students were more likely to be working in full-time jobs. Despite this, full-time employment was not the norm amongst non-students. While the majority (71%) of full-time workers were not studying, a sizeable proportion (42%) of the 57 non-students held casual/part-time jobs. This is consistent with the idea that the nature of work in young adulthood is somewhat provisional, and that these may not be the ‘career trajectory’ jobs that individuals plan to occupy for any substantial stretch of their adult lives.

The institutional role variable

As discussed in Chapter 2, the current study contrasts individuals who had undertaken university study with those who had not. The aim was to create a broad yet meaningful categorisation of qualitatively different sets of social and institutional experiences during emerging adulthood in contemporary Australia. *University-oriented*

institutional role status refers to the 76 participants who were either a) current full- or part-time university students (N=71), or b) workers who had recently completed a university degree (N= 5). *Employment-oriented* institutional role status refers to the remaining 75 participants who were either a) individuals who had not undertaken any post-secondary study or training (N= 32), b) current full- and part-time VET students and apprentices (N= 22¹⁰), or c) individuals who had completed a course at VET (N=21). This decision to categorise in this way was made based on the nature of university study, VET, and employment in Australia, and informed by concepts from developmental theory and the emerging adulthood literature. It was suggested that the world of work and the world of study represented two distinct institutions of orientation during emerging adulthood, characterised by different norms and values, regulations, and routines.

The data support the validity of the employment- vs. university-oriented role distinction in several ways. Figures 4.1 through 4.4 show how work and study differed amongst non-students, VET students, and university students. First, university students formed the largest distinct group within the sample, and represented the majority of students. Of the 94 current students, 71 (75%) were at university.

Second, employment profiles were quite different for university and VET students. As shown in Figure 4.1 and Table 4.6, university students contained the greatest proportion of part-time/casual workers and non-workers, and the smallest proportion of full-time workers. While those VET students were also mostly working in part-time/casual jobs, 30% of the VET students were in full-time work, compared with 7% of the university students. Moreover, VET students worked more hours per week, on average, than university students. Figure 4.2 and Table 4.7 show average weekly

¹⁰ One of the part-time current VET students had already completed a university degree, so was classified as university-oriented.

Table 4.6: Study and work for non-students, VET students, and university students

Student status	Employment status: N (% in student status, % total sample)			
	Not working	Casual/part-time	Full-time	Total (% total sample)
Not studying	3 (5%, 2%)	24 (42%, 16%)	30 (53%, 20%)	57 (38%)
VET	2 (9%, 1%)	14 (61%, 9%)	7 (30%, 6%) ^a	23 (15%)
University	9 (13%, 6%)	57 (80%, 38%)	5 (7%, 3%)	71 (47%)
Total (% total sample)	14 (9%)	95 (63%)	42 (28%)	151 (100%)

^aIncludes 5 full-time apprentices

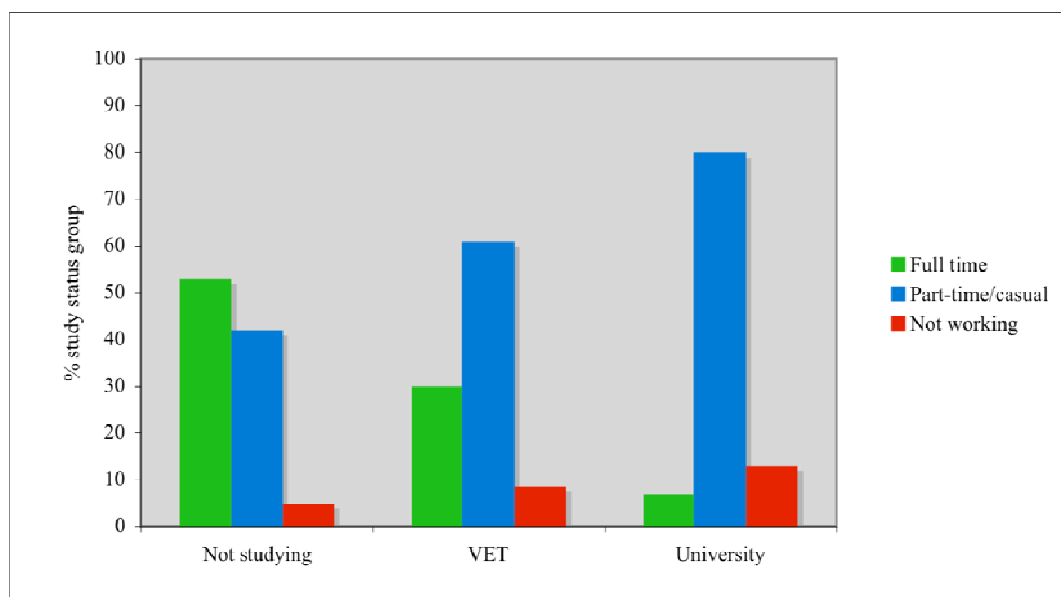


Figure 4.1: Distribution of full-time workers, part-time workers, and non-workers within university, VET and non-student groups

Table 4.7: Mean hours worked by student status

	Study status			Pairwise comparisons ^{a,b}		
	Not studying	VET	University			
Mean hours worked (SD)	33.7 (13.7)	26.2 (16.7)	14.3 (10.5)	NS > VET	NS > Uni**	VET > Uni***

*** $p < .001$. ** $p < .01$.

^a two-tailed value

^b With three tests and 2 df, critical p value adjusted to .016 (.05/3)

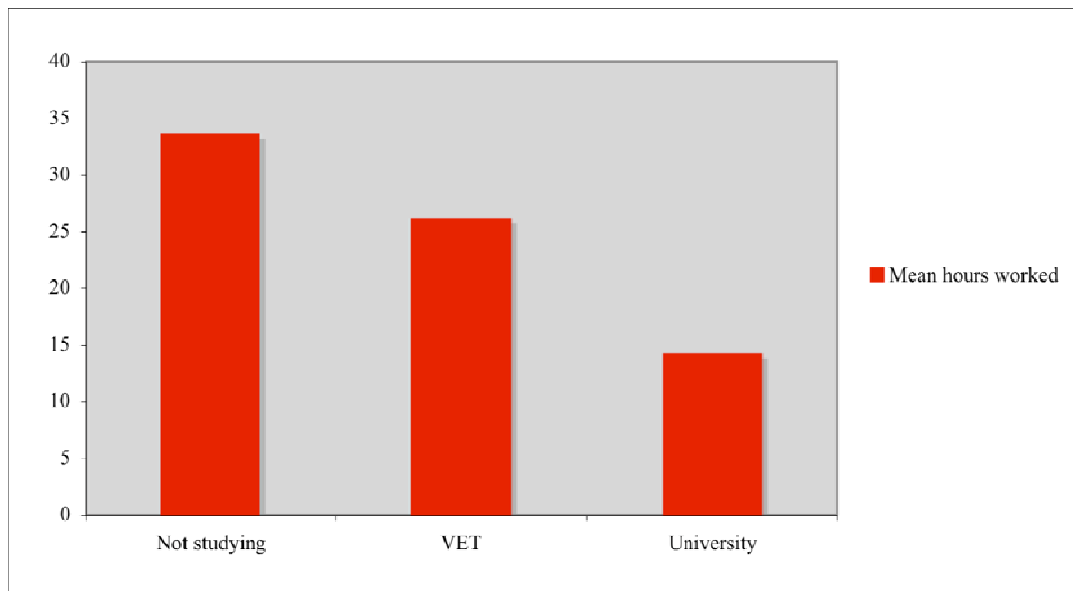


Figure 4.2: Mean weekly hours worked for university, VET and non-student groups

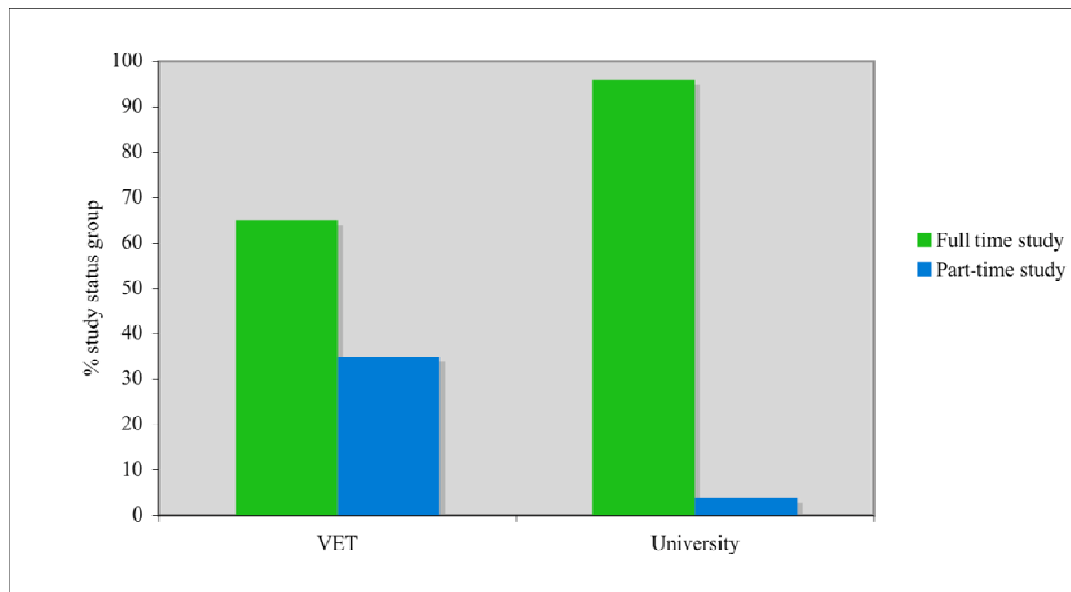


Figure 4.3: Distribution of full – and part –time study within university and VET student groups

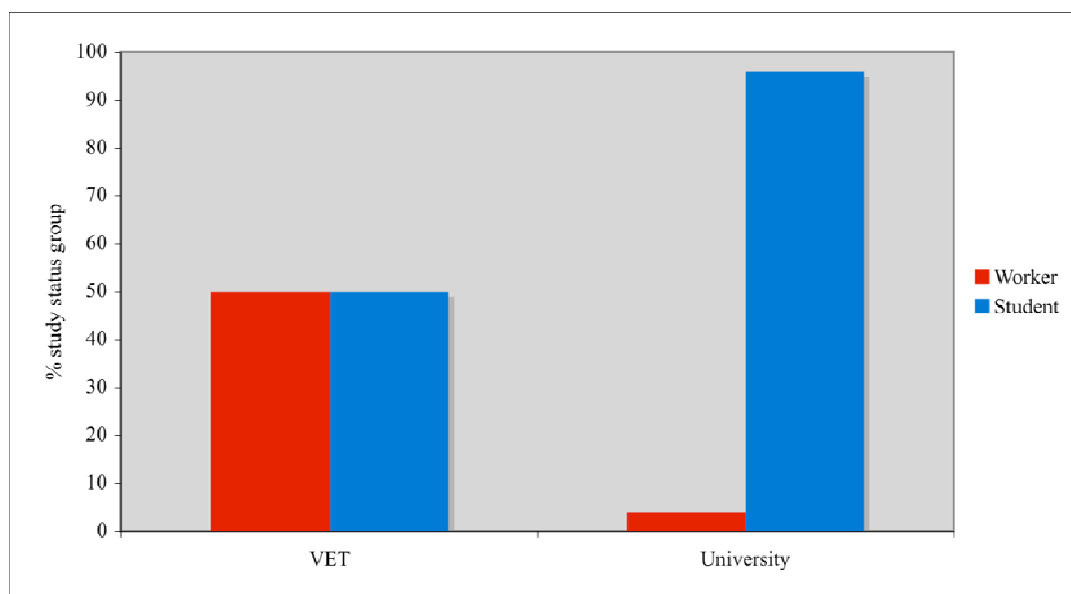


Figure 4.4: Distribution of university and VET students identifying as worker vs. student

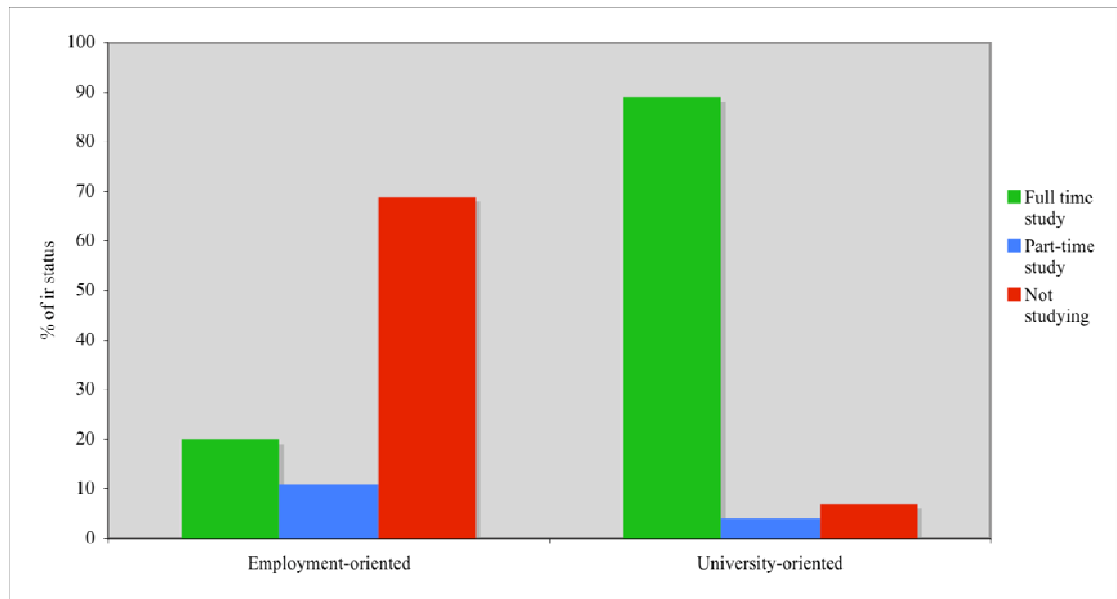


Figure 4.5: Distributions of full-time students, part-time students, and non-students within institutional role groups

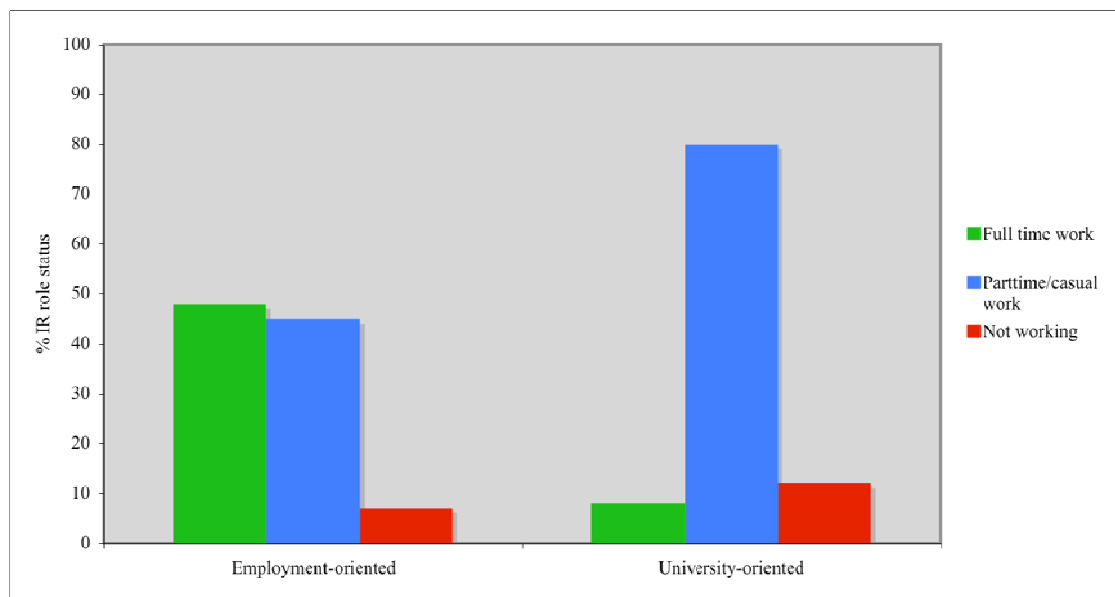


Figure 4.6: Distributions of full-time workers, part-time workers and non-workers within institutional role groups

work hours for non-students, VET and university students. Pairwise comparisons between the three group means showed that university students worked significantly fewer hours than VET students and non-students, but that hours worked by VET students were not significantly less than hours worked by non-students¹¹.

Fourth, VET students were far more likely to be enrolled part-time than university students (Figure 4.3). One third (35%) of VET students were studying part-time, compared with only 4% of university students. In other words full-time study was much more normative in the university group than the VET group. Finally, VET students were far more likely than university students to regard themselves as primarily workers rather than students. In response to the question ‘Do you consider yourself mainly as (1) a worker, or (2) a student?’ 50% of VET students responded ‘worker’ compared with 4% of university students (Figure 4.4). This indicates a greater proportion of participants with a workplace- dominant orientation within the VET group

Figures 4.5 and 4.6 show the differences in work and study status for the employment-oriented and university-oriented groups. Figures are given in Table 4.8. As noted above, the university-oriented group included five individuals who had completed a university degree, and were now working either part-time (4) or full-time (1). It was considered appropriate to include these participants with the university-oriented group because, first, although they were amongst the older participants, they would have only recently completed their studies. Second, these young people were at the latter end of the post-high school pathway to adult employment in which university study is the dominant institutional experience, and this, rather than an employment-oriented experience, would have shaped their recent development.

¹¹ With $df=2$ and three comparisons to be made, critical alpha for these tests was set at $p < .016$ ($=.05/3$).

Table 4.8: Work and study for employment-oriented and university-oriented institutional roles

	Institutional role (% in institutional role status, % total sample)		
	Employment-oriented	University-oriented	Total (% total sample)
Work status			
Not working	5 (7%, 3%)	9 (12%, 6%)	14 (9%)
Part-time/casual	34 (45%, 23%)	61 (80%, 70%)	95 (63%)
Full-time	36 (48%, 24%)	6 (8%, 4%)	42 (28%)
Study status			
Not studying	53 (71%, 35%)	4 (5%, 3%)	57 (38%)
VET			
Full-time	15 (20%, 10%)	0	15 (10%)
Part-time	7 (9%, 5%)	1 (1%, 0.5%)	8 (5%)
University			
Full-time	0	68 (90%, 45%)	68 (45%)
Part-time	0	3 (4%, 2%)	3 (2%)
Total (% total sample)	75 (50%)	76 (50%)	151 (100%)

Physical aggression

The physical aggression measure was based on participants' reports of perpetrating physical assault, threats of violence, and being involved in fights, in the last 12 months. The individual items, and response frequencies for each item, are displayed in Table 4.9. Although the responses to each item tap frequency of physical aggression, the aggression scale was constructed using the variety score method, in which scores are calculated by summing the number of different types of behaviours engaged in within the reference period, regardless of the frequency of occurrence. That is, each item—physical assault, threat of violence, and physical fight—was scored 1 for occurrence and 0 for non-occurrence¹². This produced a variety scale that ranged from 0 to 3. The response distribution, mean and standard deviation, are shown in Table 4.10.

¹² As may be seen in Table 4.9, single items were used to assess physical assault and threat, but the fighting variable was based on six items: being involved in a fight with a) someone at work; b) a friend or friends; c) a family member; d) romantic partner; e) someone 'out at night'; and f) some other person.

Table 4.9: Physical aggression items, Time 3

Item	Response format	Number of observations: <i>(has happened at least once)</i>
Assault		
Thinking back over the last 12 months, how often, if at all, have you attacked someone to physically hurt them? For example, by hitting, kicking, pushing? This does not include incidents where you got into a fight with another person and you hit each other.	(1) never, (2) once, (3) twice, and (4) three times of more.	13
Threats of violence		
Thinking back over the last 12 months, how often, if at all, have you threatened to hurt someone physically?	(1) never, (2) once, (3) twice, and (4) three times of more.	40
Fights		
Thinking back over the last 12 months, how often, if at all, have you been involved in a fight?	(1) never, (2) once, (3) twice, and (4) three times of more	32

Table 4.10: Prevalence of physical aggression at Time 3, mean and standard deviation

	N	%	Mean	Standard deviation
Never	102	67%	.51	.84
Once	28	19%		
Twice	15	10%		
Three times or more	6	4%		
Total	151	100%		

These items were grouped into one binary variable (1= involved in a fight with any party at least once) because it was impossible to know whether there was overlap in participants' reports of different incidents.

A variety score was preferred over a frequency score for three reasons. First, variety scores are less skewed than frequency scores. Second, they give equal weight to more serious behaviours (such as assault) and less serious behaviours (like fighting), unlike frequency scores, which tend to give more weight to less serious acts that are committed frequently. Finally, they have been shown to be more reliable than frequency scores for individuals who engage in aggressive behaviours often (Bendixen, Endresen, & Olweus, 2003; Krueger, et al., 1994; Moffitt, et al., 1997).

Data Analysis

Analysis strategy

Analyses are presented in Chapters 5 to 8. Chapter 5 presents preliminary analyses that focus purely on the Time 1 and Time 2 data, from primary school and high school. The aim is to provide a clear picture of how bully trajectory groups differed in their socio-emotional functioning during the school years, as well as the extent to which these factors contributed to continuity in bullying over the primary school to high school transition.

Chapter 6 presents analyses designed to address the first set of research questions: (1) To what extent do bullying and socio-emotional functioning during school directly predict adult aggression, and (2) Do drinking and institutional role have any additional effects on aggression, and are such effects additive or interactive with bully trajectory group?

The overall aim of the chapter is to determine whether, and under what conditions, different levels of early adult drinking and/or an employment- vs. university-oriented institutional role act to either promote or inhibit continuity from childhood bullying to adult aggression. In Chapter 3 I outlined three possibilities: Time 3 transition experiences (1) might have little impact on adult aggression beyond the risk

conveyed by prior bullying, (2) might add to the prediction of adult aggression beyond past trajectories of bullying, with positive or negative effects applying across the sample, or (3) might moderate the relationship between prior bullying and adult aggression, acting to promote either continuity or discontinuity in aggression, depending upon developmental history of bullying. Based on the evidence reviewed in Chapter 3, an additional possibility is that some of the other variables measured at Time 1 and Time 2 (shame management, impulsivity and school adjustment) could have enduring effects on Time 3 aggression via the *B* paths, even after accounting for the effect of prior bullying.

I begin descriptively, by looking at the frequency of Time 3 physical aggression in each bully trajectory group. This provides an initial picture of continuity in aggression from childhood to adulthood, and indicates whether the persistent bully group engaged in more acts of physical aggression in adulthood than the adolescent-onset or child-limited groups.

In the second step I estimate a series of ordinary linear regression models to assess the extent to which bullying and socio-emotional predictors account for unique variance in Time 3 aggression, via the *A* and *B* paths in Figure 3.1. Direct effects of Time 1 predictors and direct effects of Time 2 predictors are initially considered in two separate models, using the continuous measure of bullying from each age period. This examines the extent to which adult aggression is predictable based solely on measures of distal risk at a particular point in time. I then estimate a model that includes the categorical bully trajectory group measure, as well as socio-emotional variables from both time periods. This assesses whether, controlling for other measures of functioning, persistent bullies are significantly more likely to be aggressive young adults than members of other bully trajectory groups.

The next step assesses whether the Time 3 transition experiences account for any additional variance in concurrent aggression over above measures of distal risk, and if so, whether the effect differs across bully trajectory groups. As outlined earlier in this chapter, I divide the sample into four groups based on Time 1 and 2 self-reported bullying, including (1) non-bullies, (2) child-limited bullies, (3) adolescent-onset bullies and (4) persistent bullies. I then create interaction terms between this four – level categorical variable and the two transition experiences to examine whether any effects of drinking and institutional role status might be different at different levels of bullying. A statistically significant interaction between the bully trajectory group variable and drinking, or between bully trajectory group and institutional role status, would indicate that these factors have different impacts on aggression within different bully groups.

Chapter 6 provides information about the *A* and *B* paths, directly linking Time 1 and Time 2 measures with adult aggression, as well as the X^3 paths, linking Time 3 transition experiences with aggression. In Chapters 7 and 8 I build upon these findings to address the second set of questions: (3) What are the mediated longitudinal pathways linking school bullying with adult aggression? and; (4) To what extent are these mediated pathways the same or different across bully trajectory groups?

Addressing the third question involves an investigation of the extent to which the adult Time 3 transition experiences—institutional role and drinking—are influenced by Time 1 and Time 2 bullying and socio-emotional functioning, and thus act as proximal mediators between these earlier measures of ‘risk’ and adult aggressive behaviour. These relationships are represented by the *C* and *D* paths in Figure 3.1. From Figure 3.1, it may be seen that there are three sets of longitudinal relationships to consider: direct links between adolescence and the adult transition experiences (via the C^2 and D^2 paths), direct links between childhood and the adult transition experiences (via the C^1 and D^1 paths), and indirect links between childhood and the adult transition

experiences, in which effects of childhood predictors are mediated by high school variables (for example, $C^I - D^2$). The overall analysis strategy involves looking separately at each transition experience (drinking in Chapter 7 and institutional role in Chapter 8), and, working backwards in time, focusing on the individual links in this chain of events between adulthood and childhood.

For each transition experience, I carry out three analysis steps. The first step corresponds to the C and D arrows in Figure 3.1, directly linking Time 1 and Time 2 measures of bullying and socio-emotional functioning to the adult transition experience, via the C^2 and D^2 paths (from adolescence) and the D^I and C^I paths (from childhood). I treat the transition experiences as dependent variables in regression analyses with predictors from, first, adolescence, and secondly, childhood. This examines whether, and how strongly, measures of bullying or socio-emotional functioning directly predict different post-high school levels of drinking or institutional role status. The second step moves further back in the chain of events to examine links between potential Time 2 predictors of the transition experience and variables measured at Time 1. This provides an indication of how childhood experiences may relate to adult drinking or institutional role by the way in which they influence functioning during high school.

In the final step I combine findings from the first two steps regarding predictors of the transition experience with what was learned about predictors of aggression in Chapter 6. This is done by using path modelling with measured variables to jointly assess the significance of links in the potential chain of mediated effects from childhood bullying to adult aggression via either drinking or institutional role. I do not, however, attempt to simultaneously account for all the possible patterns of connection illustrated in Figure 3.1. Rather, I focus only on the clearest links in the chain of events to examine ‘trimmed’ forms of the relationships in Figure 3.1. The aim is to use these models as

tools in an attempt to interpret how measures of functioning during the school years relate to each other and contribute to longer-term adult outcomes.

The final research question addresses the issue of whether mediated pathways from childhood bullying to adult aggression estimated at the sample level are the same or different across bully trajectory groups. Statistically, this question implies the presence of moderated mediation. In other words, it is possible that bully trajectory group would moderate the mediational process such that indirect effects in the models would vary systematically as a function of bully trajectory group (Flora, Khoo, & Chassin, 2007).

There are several ways to approach testing such conditional indirect relationships. One obvious solution would be to split the sample and examine path models separately within each bully trajectory group. However, the overall small sample size and even smaller size of the bully trajectory groups (for example, there were only 23 persistent bullies) means that there was insufficient power to construct separate longitudinal path models. Another option available to researchers is to incorporate moderation into a mediated path model. Several authors provide techniques for estimating conditional indirect effects within path models (for example, Edwards & Lambert, 2007; Preacher, Rucker, & Hayes, 2007). There were two main reasons why this approach was beyond the scope of the present study. The first was a general difficulty incorporating a categorical moderator that captures longitudinal information into a path analysis. The second was that bullying might also act as a mediator in the modelling exercises described above. For instance, it was suggested in Chapter 3 that effects of Time 1 socio-emotional functioning for adult aggression might be mediated via adolescent bullying.

For these reasons, I instead use simple descriptive statistics and figures to visually assess the degree to which the variables in the path models in Chapters 7 and 8

are similarly associated with adult outcomes in different bully trajectory groups. These procedures are described in greater detail in Chapter 7.

Additional analysis issues

Detecting and testing mediated effects in linear regression

In the opening chapters I posed a number of questions alluding to the presence of mediated, or indirect, relationships in the data. For example:

- Are distal measures of shame management related to Time 3 aggression via their relationship with bullying?
- Are there reciprocal longitudinal relationships between school adjustment and shame management over the primary school-high school transition?
- Will the Time 3 transition experiences increase the ‘spread’ in aggression amongst the population of emerging adults by exacerbating pre-existing patterns of adaptive and maladaptive functioning?

Before commencing the analyses it is useful to clarify the approach that I take to identifying possible mediated effects in regression models. Mediation refers to situations in which the effect of one variable on an outcome of interest appears to be transferred through a third variable (MacKinnon & Dwyer, 1993). In other words, variable a predicts variable b , which in turn predicts c , the outcome. Thus, some portion of the total effect of a on c is accounted for by b . According to Baron and Kenny’s (1986) widely used criteria, a mediated effect is indicated if a) there is a significant relationship between the IV and the DV, b) there is a significant relationship between the IV and the mediator, c) the mediator still predicts the DV when the IV is controlled, and d) the relationship between the IV and the DV is substantially attenuated in the presence of the mediator. Coefficients relating to a and c may be obtained by entering the IV and mediator on successive steps in a hierarchical regression analysis predicting

the DV, while the coefficient relating to b is obtained by regressing the mediator on the IV. The statistical significance of the size of the mediated $a \rightarrow b \rightarrow c$ effect may then be assessed using the Sobel test.

Chapters 5 and 6 are mostly concerned with mediated effects for which measures of aggression (bullying and Time 1 and Time 2 in Chapter 5, and physical aggression at Time 3 in Chapter 6) are the dependent variables. However, in these chapters I do not carry out analyses predicting potential mediators, nor do I test the significance of indirect effects. Instead, I simply scope the coefficients within hierarchical regression models for initial indications of mediation with regard to Baron and Kenny's first and third criteria: a significant relationship between the independent and dependent variables, and a subsequent substantial drop in this coefficient when the mediator enters the model. For instance, in the first question above, I would conclude that Time 2 bullying mediated the relationship between Time 2 shame displacement and Time 3 aggression if an initially significant coefficient for Time 2 displacement were substantially reduced in the presence of Time 2 bullying. Such potential mediated patterns are then carried forward to inform the construction of the longitudinal path models in Chapters 7 and 8. Following recent methodological recommendations for assessing mediated relationships with small sample sizes (Preacher & Hayes, 2008; Shrout & Bolger, 2002), the magnitude and significance of indirect effects in these models are tested using bootstrapped 95% confidence intervals. These procedures are outlined in detail in Chapter 7.

Sex differences

A final important point regards the treatment of sex. The major questions of interest in this thesis pertain broadly to the interplay between distal socio-emotional functioning and proximal experiences during the early adult transition in shaping the pathway from school bullying to adult aggression. The developmental literature

suggests that these longitudinal processes will differ in important ways for males and females, and ideally, analyses would be presented separately for males and females. Given the sample size, however, for the purposes of the present study I chose to focus primarily on exploring longitudinal pathways while controlling for sex in each analysis. Thus, although the findings highlight some important sex differences, the analyses in the following chapters are presented for males and females combined.

Reporting of results

Chapters 5 to 8 present results from a number of multiple regression models. Standardised regression coefficients and 95% confidence intervals for the unstandardised coefficient are presented in the text. However, unstandardised coefficients are reported for the interpretation of moderated effects in Chapter 6. Tables in Appendix C present unstandardised coefficients, as well as squared semi-partial correlations between predictor variables and dependent variable in each model.

CHAPTER 5:

THE NATURE OF DISTAL RISK: TRAJECTORIES OF BULLYING DURING THE SCHOOL YEARS

This chapter presents preliminary analyses that focus exclusively on the primary school and high school data.

The major aims of the current research pertain to explanations of adult aggression from distal measures of bullying and socio-emotional functioning during school, and proximal measures of drinking and institutional role during emerging adulthood. The literature reviewed in the opening chapters suggests that bullying during school will predict aggression during adulthood. However, bullying during childhood and adolescence is itself associated with a wide range of risk and protective factors residing in both the individual and his or her social contexts, and these may function to mediate associations between early bullying and later aggression. The present study focuses on two aspects of socio-emotional functioning during school: self-regulatory ability, represented by impulsivity and shame management, and school adjustment, represented by connectedness to school and academic functioning. In Chapter 3 I described how these factors have been shown to relate both to each other and to bullying in earlier waves of the Life at School study, and outlined various ways in which they might, directly or indirectly, contribute to early adult aggression. Thus, an important first step in considering explanations of adult aggression is examining the nature of earlier pathways of risk.

To this end, this chapter describes patterns of involvement in bullying over Times 1 and 2, describes differences in socio-emotional functioning among the four bully trajectory groups, and assesses how much these factors account for continuity in bullying between primary school and high school. The overarching aim of the chapter is to provide a characterisation of the nature of trajectories of bullying as they developed

during the school years. Thus, the analyses undertaken in later chapters concerning the adult consequences of bullying trajectories will be grounded in an awareness of the Time 1 and Time 2 factors that contributed to these patterns of behaviour.

Analytic plan

Analyses are presented in two stages. Stage 1 describes characteristics of the four bully trajectory groups. In the first step, I describe stability and change in bullying status between primary school (Time 1) and high school (Time 2), and show how these patterns define the four bully trajectory groups. For instance, how many children desisted from bullying between primary school and high school (the child-limited bullies)? How many persisted in bullying at both time points (the persistent bullies)? Next, I examine group differences in demographics and mean-level adjustment on measures of impulsivity, school adjustment, and shame management. Which aspects of socio-emotional functioning differentiate bully trajectory groups during the school years? This provides a descriptive overview of configurations of distal risk for each group, and tests whether the persistent group display elevated levels of maladjustment in comparison to other groups.

The second analysis stage examines the extent to which these factors are associated with continuity in bullying between primary school and high school. These analyses use the *continuous* measure of bullying at Time 1 and Time 2, rather than the bully trajectory group categorical variable (refer to Chapter 4 for a discussion of these measures). I first report bivariate correlations among all Time 1 and Time 2 variables, concentrating on stability in measures of socio-emotional functioning over time. Second, I regress Time 2 bullying on measures of socio-emotional functioning from both time periods, while controlling for demographic factors and Time 1 bullying. This is designed to a) confirm, in relation to earlier Life at School studies, the relative

importance of the socio-emotional variables in predicting Time 2 bullying, and b) provide an initial indication of interrelationships among school adjustment and shame management variables over Times 1 and 2 in the prediction of Time 2 bullying. In this way, this analysis establishes some of the earlier links in the pathway from school bullying to adult aggression set out in Figure 3.1, and thus feeds into the path-modelling exercises reported in 7 and 8.

Stage 1: Developmental trajectories of bullying

Patterns of bullying from primary school (Time 1) to high school (Time 2)

Table 5.1 shows the proportions of children classified as bullies and non-bullies at Times 1 and 2, as well as movement in and out of these categories between the two assessments. Consistent with other studies in the bullying field, it shows that bullying was a common behaviour among children in this study: just under 50% of the sample reported repeatedly bullying another student at some point across the first two waves of study. In a further consistency with longitudinal patterns in studies of childhood bullying and aggression generally, the largest group were the children who were never classified as bullies. Of the 78 children who were non-bullies at Time 1, three-quarters were still non-bullies at Time 2. Amongst the rest of the sample, however, there was considerable movement in and out of bullying between primary school and high school. For instance, more than half of the 49 children classified as bullies at Time 1 had ‘desisted’ by Time 2, thus falling into the child-limited bully trajectory group. On the other hand, half of the 47 children classified as bullies at Time 2 had not fallen into this category in primary school, thus falling into the adolescent-onset bully trajectory group.

The percentage of children meeting the criteria for bullying at both Times 1 and 2, the persistent bullies (15% of the sample), was relatively large compared to the

Table 5.1: Longitudinal patterns of bullying between primary school and high school

Bullying in primary school (Time 1)		Bullying in high school (Time 2)		
		Non-bullies	Bullies	Total
Non-bullies		78	24	102
	% of Time 1 non-bullies who stayed Time 2 non-bullies (non-bullies)	76.5	% of Time 1 non-bullies who became Time 2 bullies (adolescent-onset)	23.5
	% of Time 2 non-bullies who were Time 1 non-bullies (non-bullies)	75.0	% of Time 2 bullies who were Time 1 non-bullies (adolescent-onset)	51.1
Bullies		26	23	49
	% of Time 1 bullies who became non-bullies at Time 2 (child-limited)	53.0	% of Time 1 bullies who stayed Time 2 bullies (persistent)	46.9
	% of Time 2 non-bullies who were Time 1 bullies (child-limited)	25.0	% of Time 2 bullies who were Time 1 bullies (persistent)	48.9
Total		104	47	151
		100.0	100.0	

Time 1 and Time 2 bullying $r = .31^{***}$

child-limited and adolescent-onset groups (17% and 16% respectively), and to patterns from other studies of antisocial behaviour. In Moffitt's research, for instance, the size of the life-course persistent group was less than half as large as the adolescence-limited group, representing about 10% of the sample (Moffitt, et al., 1996). Pepler (2008) examined trajectories of bullying from age 10 to 17 and identified 10% of individuals who engaged in consistently high levels of bullying, compared with 35% who engaged in consistently moderate levels and a further 13% whose bullying declined in adolescence. On the other hand, other studies reviewed in earlier chapters (for example Roisman, et al., 2004; Stouthamer-Loeber, et al., 2004) report larger proportions of persistently antisocial individuals, up to 30% of the sample.

It is likely that inconsistencies in the literature reflect both different methods and measures used to assess and classify antisocial behaviour, as well as characteristics of the original study samples. As such, the relatively large size of the persistent bully

group may be partly attributable to the general nature of the measure of bullying used, which may have captured individuals ‘persisting’ in both physically violent forms of bullying, as well as those persisting in behaviour like minor teasing. Overall, however, the patterns are consistent with the broader literature in showing that temporary bullying, rather than ongoing bullying, is the norm during the school years. The question that now arises is whether children who exhibit the persistent developmental pattern of bullying will also exhibit more physical aggression in adulthood than other trajectory groups. This issue is addressed in the next chapter.

Bully trajectory group differences: Demographics and socio-emotional functioning at Times 1 and 2

Table 5.2 describes differences in demographics and mean-level adjustment on Time 1 and Time 2 measures across the four bully trajectory groups. These group differences are further illustrated in Figure 5.1 A to E (Time 1 variables) and Figure 5.2 A to D (Time 2 variables).

I focus first on demographic factors. The upper part of the table shows the percentage of males in each bully trajectory group, and the percentage of participants in each group whose parent attended university. Not surprisingly, the group with the lowest proportion of males (30%) was the non-bully group. The proportion rose to 50% in the adolescent-onset group, and males formed the majority of the persistent bully group (74%). The proportion of university-educated parents was almost equal at just under 50% in the non-bully, child-limited and persistent bully groups, but stood at only 21% in the adolescent-onset group. As note in Chapter 4, these high levels of education reflect both the relatively high socio-economic status of the initial Time 1 sample, as well as attrition from the study of children with less-educated parents (see Chapter 4). The implication of these patterns will be discussed in later chapters.

Table 5.2: Bully trajectory groups compared on demographic factors Time 1 and Time 2 measures of school adjustment and shame management

	Non-bullies (n= 78)	Child-limited (n= 26)	Adolescent (n= 24)	Persistent (n= 23)	AO vs. NB	NB vs. P	P vs. AO
<i>Demographic factors</i>	N (%)				Chi-square		
Sex ¹	23 (30%)	11 (42%)	12 (50%)	17 (74%)	males and females equally likely in non-bully and adolescent-onset groups $p = .06$	males more likely to be persistent bullies $p < .001$	males and females equally likely to be in adolescent-onset and persistent groups $p = .09$
Parent education ²	36 (46%)	11 (42%)	5 (21%)	11 (48%)	more university-educated parents in non-bully group $p < .05$	equal share university-educated parents in non-bully and persistent groups $p = .89$	more university-educated parents in persistent group $p = .05$
<i>Primary school</i>	z Score (M ± SD)				Planned contrasts [†]		
Impulsivity	-.34 ± 0.8	.17 ± 1.3	.35 ± 0.8	.60 ± 0.7	AO > NB**	P > NB***	P = AO ($p = .29$)
Academic difficulties	-.17 ± 0.9	-.02 ± 1.1	.29 ± 1.1	.31 ± 1.1	AO > NB*	P > NB*	P = AO ($p = .95$)
Liking for school	.22 ± 0.9	.10 ± 0.8	-.16 ± 1.1	-.68 ± 1.2	AO = NB ($p = .09$)	P < NB***	P = AO ($p = .07$)
Displacement	-.40 ± 0.6	.50 ± 1.1	.13 ± 1.1	.64 ± 1.1	AO > NB*	P > NB***	P = AO ($p = .13$)
Acknowledgement	.16 ± 0.8	.10 ± 0.8	-.01 ± 1.1	-.65 ± 1.3	AO = NB ($p = .48$)	P < NB**	P = AO ($p = .08$)
<i>High school</i>							
Academic difficulties	-.23 ± 0.8	-.04 ± 0.9	.22 ± 1.3	.58 ± 1.2	AO = NB ($p = .11$)	P > NB**	P = AO ($p = .31$)
School connectedness	.15 ± 0.9	.09 ± 1.1	-.12 ± 1.0	-.48 ± 1.0	AO = NB ($p = .25$)	P < NB**	P = AO ($p = .22$)
Displacement	-.23 ± 0.8	-.10 ± 0.7	.53 ± 1.2	.35 ± 1.2	AO > NB*	P > NB*	P = AO ($p = .64$)
Acknowledgement	.33 ± 0.7	.19 ± 0.9	-.53 ± 1.2	-.78 ± 1.2	AO > NB**	P < NB***	P = AO ($p = .46$)

Note: NB (non-bully); AO (adolescent-onset) P (persistent) [†]two-tailed values. ¹ male = 1. ² university = 1

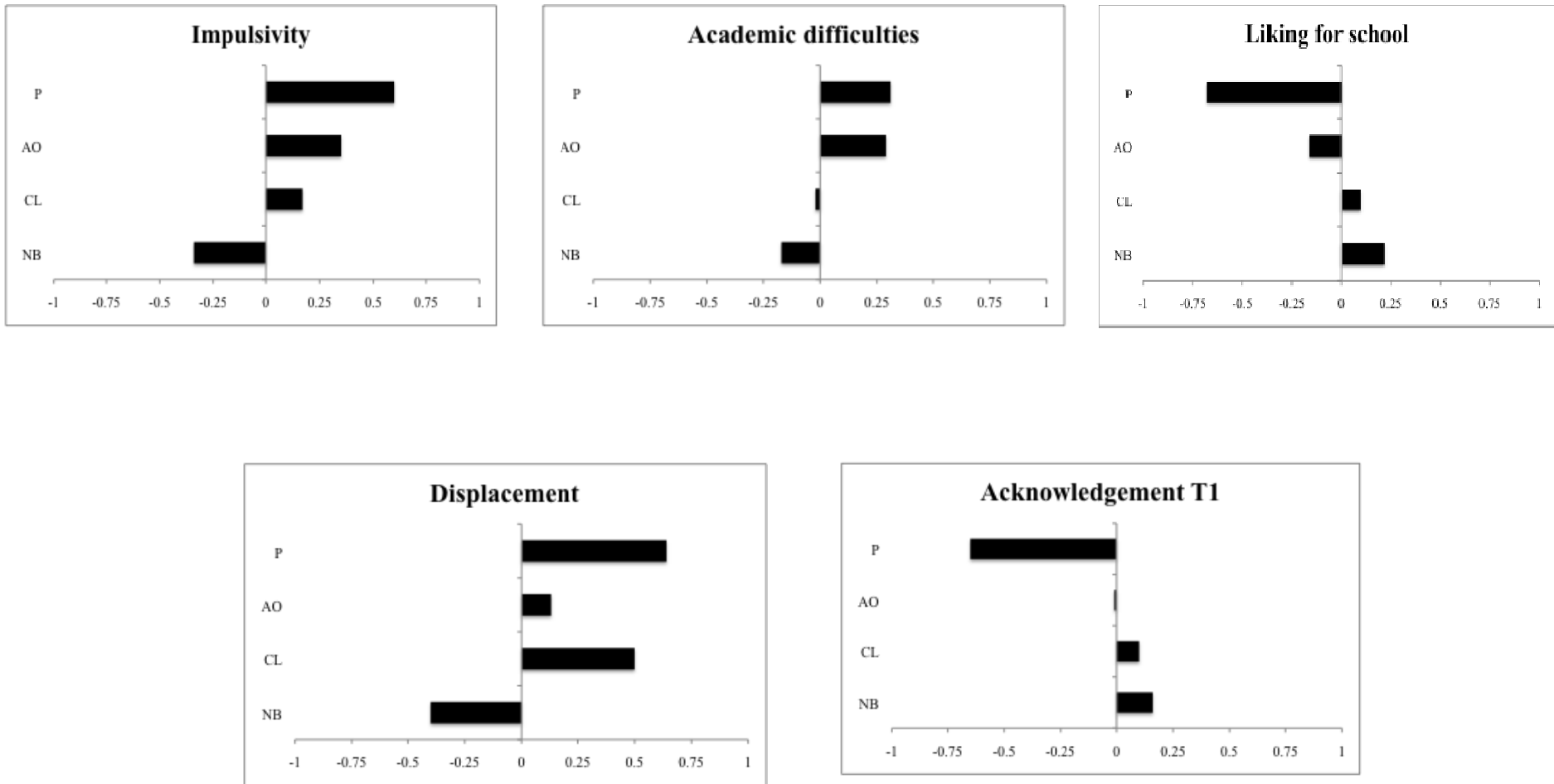


Figure 5.1: Bully trajectory group mean z-scores on Time 1 measures of school adjustment and shame management

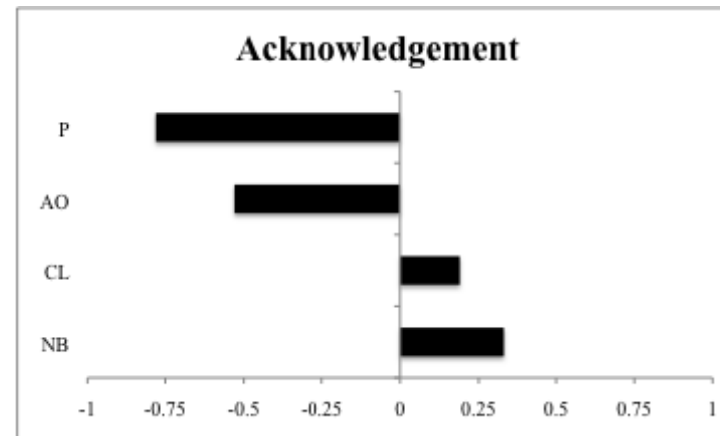
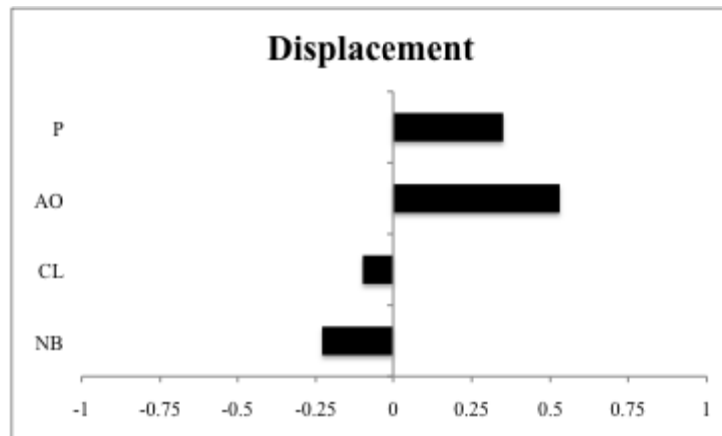
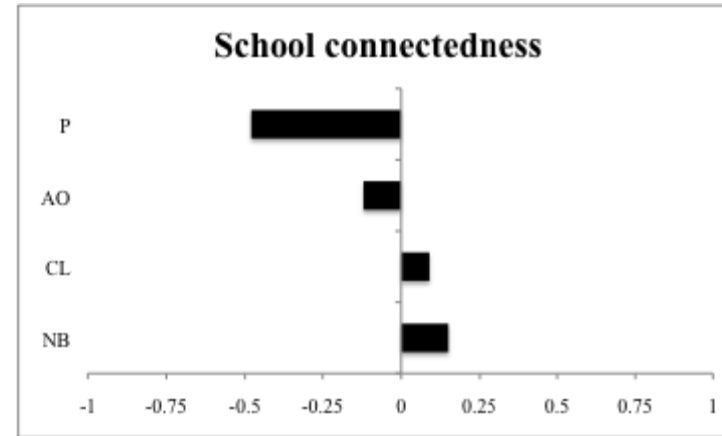
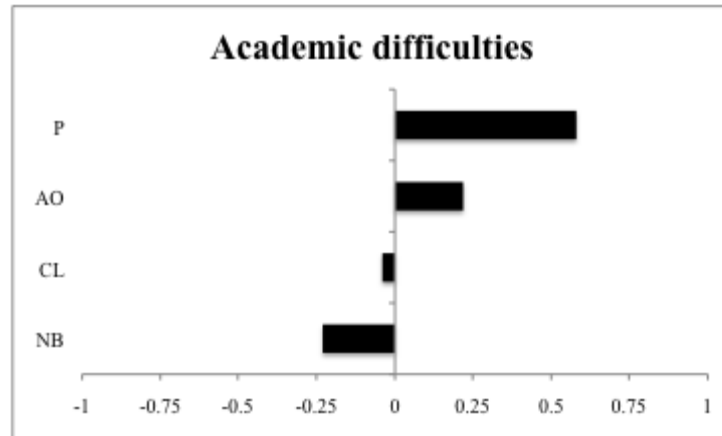


Figure 5.2: Bully trajectory group mean z-scores on Time 2 measures of school adjustment and shame management

The lower rows of Table 5.2 show continuous variables as z scores standardised on the full sample with a mean of 0 and a standard deviation of 1. Thus, the mean z score for each group shows how far that group deviates from the mean score for the full sample, which may be interpreted as a normative standard within the context of this study. In order to protect against Type II error, planned orthogonal contrasts were used to examine mean-level group differences on the Time 1 and Time 2 measures. Because a maximum of $k - 1$ contrasts may be performed per outcome variable (where k is the number of groups, in this case four), the non-bullies were compared both with the adolescent-onset and persistent bullies, and the adolescent-onset group was compared with the persistent group. I chose to concentrate on the adolescent-onset and persistent groups because the analyses conducted later in this chapter primarily highlight differences between these groups, and how they compare to non-bullies.

The comparisons revealed that persistent bullies exhibited significantly poorer self-regulatory skills and worse school adjustment at both Times 1 and 2 than their non-bullying counterparts. In primary school, these children were more impulsive, reported greater academic difficulties, liked school less, and were more likely to both displace and fail to acknowledge shame. In high school, they continued to report academic difficulties, were poorly connected to school, and continued to manage shame poorly. The adolescent-onset group were more troubled than the non-bullying group, but they did not report as many overall difficulties as the persistent group. For instance, mean scores for adolescent bullies did not significantly deviate from those for non-bullies on measures of Time 1 liking for school and shame acknowledgement, or Time 2 measures of academic difficulties and school connectedness. Finally, although persistent and adolescent-onset bullies reported more problems than non-bullies, the two groups were not distinguishable from each other on any of the Time 1 or Time 2 measures.

Stage 2: Continuity in bullying over primary school and high school

Children who bullied during school clearly experienced difficulties with self-regulation and school adjustment. Here I assess the relative importance of these factors in predicting changes in bullying between Times 1 and 2. The first task is to examine the intercorrelations among these variables during the school years.

Bivariate correlations among Time 1 and Time 2 variables

Table 5.3 shows correlations among Time 1, Time 2 and demographic variables. Consistent with earlier analyses (Ahmed, 2001; Morrison, 2006), the two shame management variables were individually related to contemporary bullying in both primary school and high school. Acknowledgement was negatively correlated with bullying, and displacement positively correlated with bullying. Cross-sectional correlations between impulsivity, school adjustment variables and shame management variables were also generally significant and in the expected directions. Time 1 liking for school and Time 2 school connectedness were positively correlated with contemporary acknowledgement, though unrelated to contemporary displacement, suggesting that the acknowledgement dimension of shame management may be more responsive to perceived 'safe space' than the displacement dimension. Academic difficulties were related to higher displacement scores at Time 1, but lower acknowledgement scores at Time 2. Time 1 impulsivity was positively correlated with Time 1 displacement, but unrelated to acknowledgement. Impulsivity was also positively correlated with Time 1 bullying. Finally, in general, poor school adjustment (for example, not liking school, academic difficulties) was associated with greater bullying at each period.

Table 5.3: Bivariate correlations between variables from Times 1 and 2

		Time 1								Time 2			
		1	2	3	4	5	6	7	8	9	10	11	12
1	Sex ¹	-											
2	Parent education ²		-										
Time 1													
3	Impulsivity	.19*	-.14	-									
4	Academic difficulties	-.02	-.03	.17*	-								
5	Liking for school	-.27**	-.06	-.18*	-.19*	-							
6	Shame displacement	.14	-.07	.27*	.18*	-.09	-						
7	Shame acknowledgement	-.28**	-.09	-.04	-.07	.30***	.07	-					
8	Bullying	.21**	.04	.30***	.15	-.26**	.41***	-.23**	-				
Time 2													
9	Academic difficulties	.05	-.15	.17*	.45***	-.25**	.22**	-.05	.20*	-			
10	School connectedness	-.30***	-.04	-.04	-.16	.40***	.04	.31***	-.10	-.18*	-		
11	Shame displacement	.05	-.05	.18*	.06	-.09	.42***	.04	.12	.14	.04	-	
12	Shame acknowledgement	-.34***	.04	-.18*	-.09	.41***	-.21*	.34***	-.18*	-.21**	.48***	-.19*	-
13	Bullying	.23**	-.14	.31***	.17*	-.24**	.25**	-.23**	.31***	.26**	-.22**	.33***	-.45***

*** $p < .001$. ** $p < .01$. * $p < .05$

¹ Male = 1,

² Reporting parent attended university = 1, reporting parent did not attend university = 0

Time 1-Time 2 correlations reveal considerable rank stability over the primary school – high school transition, in terms of both behaviour and socio-emotional functioning. As would be expected from the patterns reported above in Table 5.1, Time 1 and Time 2 measures of bullying were positively correlated. Moreover, Time 1 and 2 measures of academic difficulties, bullying and shame management were all positively and significantly correlated. Of note, the correlation of .40 between Time 1 liking for school and Time 2 school connectedness offers some confirmation that these differing measures both tap a similar adjustment-related construct. Inspection of the correlations between the Time 1 school adjustment and shame management variables and Time 2 bullying revealed similar patterns to the cross-sectional relationships described. Time 1 shame management, impulsivity and school adjustment were all correlated with Time 2 bullying. Interestingly, the pattern of associations indicates that Time 2 acknowledgement was much more predictable from earlier measures than Time 2 displacement. Apart from the earlier measure of displacement, only Time 1 impulsivity was significantly correlated with Time 2 displacement. Time 2 acknowledgement, in contrast, was correlated with all the Time 2 predictors except academic difficulties. Finally, greater Time 2 bullying was also significantly correlated with higher Time 1 impulsivity, academic difficulties and less liking for school.

Proximal and distal predictors of Time 2 bullying

Hierarchical linear regression was used to examine the relative contribution of demographic and Times 1 and 2 socio-emotional variables in predicting Time 2 bullying, with Time 1 bullying controlled. The aims of this analysis are three-fold: first, to confirm Ahmed and colleagues' (2003) findings that Time 1 bullying and shame management are poor direct predictors of Time 2 bullying, second, to evaluate the significance of changes in school adjustment and shame management after the transition to high school for the prediction of Time 2 bullying, and third, to consider whether

shame management at Time 2 would mediate the effects of contemporary school adjustment on bullying, controlling for Time 1 measures of these constructs.

To address these questions, blocks of variables were entered into the model in three steps. Variables entered at the first step included demographics (sex and parental education) and all variables measured at Time 1, including bullying. This step therefore assesses the extent to which Time 1 measures account for variance in Time 2 bullying. Based on Ahmed and colleagues' findings, I expect that bullying and shame management variables will *not* independently account for variance in Time 2 bullying. However, Time 1 impulsivity is expected to be associated with Time 2 bullying.

Time 2 school adjustment variables (academic difficulties and school connectedness) were added to the model on the second step, and Time 2 shame management variables entered on the final step. Taken together, these steps assess whether changes in school adjustment and shame management over the transition to high school make unique contributions to Time 2 bullying, after controlling for the corresponding Time 1 measures. It should be noted, however, that the measure of the child's perceived school environment was assessed with liking for school at Time 1 and school connectedness at Time 2.

On the basis of earlier studies, I expect that, with Time 1 measures controlled, Time 2 shame management will predict Time 2 bullying. As discussed in Chapter 3, however, a central proposition of shame management theory is that adaptive management depends to some extent on an individuals' perception that he or she is in institutional 'safe space'. Using the full Time 1 sample, Ahmed (2001) showed that the concurrent influence of aspects of school adjustment on bullying was mediated via shame management variables. Analyses of the Time 2 data confirm that a) low acknowledgement and high displacement predict concurrent bullying, and that b) poor school adjustment predicts low concurrent shame acknowledgement, but these relations

have not been combined to explicitly investigate whether, with earlier measures controlled, shame acknowledgement does in fact mediate the effects of school adjustment on bullying during adolescence. Entering school adjustment and shame management on subsequent steps permits an initial examination of this possibility. According to the criteria outlined in the discussion of mediation earlier, I conclude evidence of mediation if coefficients for the Time 2 school adjustment variables become substantially diminished in the third step of the model. As noted, formal mediation analyses will be conducted in later chapters.

Table 5.4 summarises results of this analysis. Looking first at the effects of Time 1 variables entered at step 1, it may be seen that, as expected, only Time 1 impulsivity accounted for a significant amount of unique variance in Time 2 bullying over and above other Time 1 variables in the model. This is despite the fact that all Time 1 predictors, with the exception of parental education, were significantly correlated with Time 2 bullying at the bivariate level. As shown in Table 5.3, however, these variables were also highly correlated with each other. Given these intercorrelations, Time 1 predictors cancel each other out in the prediction of Time 2 bullying because they account for overlapping, rather than unique variance in the dependent variable. This situation may be more clearly illustrated by an inspection of the squared semi-partial correlations for step 1¹³ (provided in Table C5.4, Appendix C), which indicate how much unique variance in Time 2 bullying was attributable to each predictor, rather than shared with other predictors. For instance, although Time 1 shame acknowledgement was correlated at $-.23$ ($p < .01$) with Time 2 bullying, once shared variance attributable to other correlated predictors was removed, this factor accounted for only 0.51% variance in R^2 .

¹³ In regression, the squared semi-partial correlation for predictor i represents the proportion of the total explained variance in the DV that is uniquely attributable to i . In other words, it represents the amount of variance in the DV that is unshared between i and all the other predictors. For any particular model, sr^2_i therefore expresses how much R^2 would be reduced were i removed from the model (Tabachnick & Fidell, 2007).

Table 5.4: Regression examining the effect of Time 2 changes in shame management and school adjustment for the prediction of Time 2 bullying

	Model 1			Model 2			Model 3			
	95% CI for B			95% CI for B			95% CI for B			
	$\beta^{\dagger}$	Lower	Upper	β	Lower	Upper	β	Lower	Upper	r
Sex ¹	.09	-.09	.32	.07	-.12	.30	.05	-.14	.25	.23**
Parent education ²	-.12	-.35	.03	-.11	-.33	.06	-.09	-.30	.06	-.14
<i>Time 1 measures</i>										
Impulsivity	.17*	.01	.29	.17*	.01	.29	.15*	.01	.24	.31***
Academic difficulties	.08	-.14	.40	.02	-.30	.32	.05	-.18	.36	.17*
Liking for school	-.10	-.19	.05	-.04	-.16	.09	-.03	-.10	.14	-.24**
Displacement	.12	-.12	.83	.12	-.13	.83	-.03	-.59	.38	.25**
Acknowledgement	-.16	-.94	.03	-.14	-.89	.08	-.08	-.71	.22	-.23**
Bullying	.12	-.05	.29	.11	-.06	.29	.14	-.01	.32	.31***
<i>Time 2 measures</i>										
Academic difficulties				.12	-.08	.43	.08	-.12	.36	.26**
School connectedness				-.11	-.27	.06	-.02	-.18	.14	-.22**
Displacement							.23**	.30	1.47	.33***
Acknowledgement							-.30***	-1.16	-.31	-.45***
ΔR^2	.21***			.02			.11***			
<i>Full model $R^2 = .36***$</i>										

*** $p < .001$. ** $p < .01$. * $p < .05$

[†] Standardised regression coefficients

¹ male = 1

² university = 1

Turning to the proximal Time 2 predictors, the second panel of Table 5.4 shows that Time 2 school connectedness was negatively associated with Time 2 bullying and that academic difficulties were positively associated with Time 2 bullying, but that neither coefficient reached significance. As expected, however, the shame management variables entered at the final step (panel 3 in Table 5.5) jointly accounted for an 11% increment in total R^2 , which was significant ($F(2, 138) = 11.80, p < .001$). Bullying was positively related to shame displacement, and negatively related to shame acknowledgement. Although the negative relationship between school connectedness and bullying at Step 2 (see Table 5.3) failed to reach significance ($\beta = -.11$) it should still be noted that this weak relationship was substantially reduced when shame management variables entered at Step 3 ($\beta = -.02$). Moreover, Time 2 shame acknowledgement was more strongly correlated with Time 2 school connectedness than with any other measure, including Time 1 acknowledgement ($r = .48$). While the small coefficient for the direct association school connectedness and bullying weakens evidence for mediation via shame management, these associations nonetheless highlight the continued salience of positive connection to the school context for adaptive shame management during adolescence.

To summarise, this analysis first confirms that direct links between Time 1 measures and Time 2 bullying were weak. Although all Time 1 predictors were significantly associated with Time 2 bullying at the bivariate level, intercorrelations between the predictors meant that only impulsivity accounted for unique variance in the dependent variable. This is consistent with findings from developmental aggression research that have repeatedly demonstrated childhood impulsivity to be a predictor of a range of adolescent problem behaviour, including bullying (White, et al., 1994).

Second, the findings show that changes in bullying between primary school and high school were most strongly associated with changes in shame management,

confirming the importance of shame management as a driver of continuity in bullying over this developmental transition. Moreover, there was some indication that school connectedness might indirectly predict Time 2 bullying via contemporary shame acknowledgement. Taking these findings together with what is already known about the relationships between school adjustment, shame management and bullying during primary school (Ahmed, 2001) it seems possible that the significance of Time 1 measures for Time 2 bullying are to be found in their relationship to Time 2 shame management. The mechanisms of this pathway will be further explored in Chapter 7.

Chapter summary

This chapter has provided an overview of bullying and socio-emotional functioning during the school years. The aim was to provide a clear look at starting points for the young people in this study, against which to ground the analyses in the next chapter that examine the extent to which distal factors predict adult aggression.

In the first stage I showed how many children were classified as bullies at Time 1 and/or Time 2, forming the four bully trajectory groups. Although almost half the individuals in the study had bullied another student at some point in their school career, only 15% reported such behaviour in both primary school and high school, confirming the non-normative nature of this persistence.

The group differences in mean-level functioning between groups reported in Table 5.2 are generally consistent with patterns reported in the broader antisocial behaviour literature, particularly with regard to the markedly poorer functioning of the persistent bullies (Moffitt & Caspi, 2001; Moffitt, et al., 1996; Pepler, et al., 2008). The elevated difficulties exhibited by the adolescent-onset bullies relative to the non-bullies is also in line with this research (Roisman, et al., 2004), although it was interesting that this group were already experiencing regulatory difficulties in primary school, three

years before onset of bullying. It was also notable that mean differences between the adolescent-onset and persistent bully groups did not reach significance. On the basis of trajectory group research, it is reasonable to expect the persistent bullies to be at higher risk of adult aggression than the adolescent-onset bullies. However, the degree of similarity between the groups raises the question of whether, once these earlier socio-emotional difficulties are taken into account, persistent bullying will carry a greater risk for adult aggression than *any* bullying occurring during adolescence, regardless of behaviour during childhood.

The regression predicting Time 2 bullying (Table 5.4 above) confirmed that direct links between Time 1 measures and Time 2 bullying were weak. Although all Time 1 predictors were significantly associated with Time 2 bullying at the bivariate level, intercorrelations between the predictors meant that only impulsivity accounted for unique variance in the dependent variable. This is consistent with findings from developmental aggression research that have repeatedly demonstrated childhood impulsivity to be a predictor of a range of adolescent problem behaviour, including bullying (White, et al., 1994).

Second, the findings show that changes in bullying between primary school and high school were most strongly associated with changes in shame management, confirming the importance of shame management as a driver of continuity in bullying over this developmental transition. Moreover, there was some indication that school connectedness might indirectly predict Time 2 bullying via contemporary shame acknowledgement. Taking these findings together with what is already known about the relationships between school adjustment, shame management and bullying during primary school (Ahmed, 2001) it seems possible that the significance of poor Time 1 socio-emotional functioning for predicting Time 2 bullying are to be found in its relationship to Time 2 shame management. This provides a justification for considering

how these variables may mediate each other in the prediction of both Time 2 bullying, and later adult outcomes. The mechanisms of this pathway will be further explored in Chapter 7.

This chapter has described distal patterns of bullying and socio-emotional functioning during school. Equipped with this knowledge of the past, in the next chapter I move on to ask whether, and how strongly, these distal variables act as direct predictors of aggression during emerging adulthood.

CHAPTER 6:

ADDITIVE AND INTERACTIVE EFFECTS OF PROXIMAL AND DISTAL FACTORS IN THE PREDICTION OF EARLY ADULT PHYSICAL AGGRESSION: THE ROLES OF BULLYING, SOCIO-EMOTIONAL FUNCTIONING AND EMERGING ADULT TRANSITION EXPERIENCES

The analyses presented in this chapter are designed to address the first set of research questions:

1. To what extent do bullying and socio-emotional functioning at Times 1 and 2 predict adult physical aggression at Time 3?
2. Do adult drinking and institutional role have any additional effects on aggression over and above distal predictors? If so, are such effects additive or interactive with bully trajectory group?

These questions are concerned with a) assessing the *direct* effects of distal vs. proximal variables on Time 3 aggression, and b) assessing whether any proximal effects differ depending upon developmental history of bullying.

Based on the literature reviewed in Chapter 1, it is reasonable to expect that school bullying will pose an increased risk for adult aggression. Moreover, Chapter 3 highlighted ways in which the earlier socio-emotional variables associated with bullying—impulsivity, shame management and school adjustment—could either increase or decrease the likelihood of early adult aggression. Thus, the first goal of this chapter is to examine the predictive power of distal variables from childhood and adolescence on physical aggression in emerging adulthood. Are persistent bullies more likely to be aggressive than other bully trajectory groups? Do earlier difficulties with impulsivity, maladaptive shame management, and low school adjustment have any direct effects on aggression at Time 3 over and above effects of prior behaviour? This examines the extent to which physical aggression during emerging adulthood is rooted in early experience.

Also discussed in Chapter 1, however, was the finding from longitudinal studies of delinquency that levels of problem behaviour tend to peak in adolescence and subsequently decline. In other words, although early aggression is the primary risk factor for later aggression, not all aggressive children continue to behave aggressively once they reach adulthood. Furthermore, trajectory analyses show that there is heterogeneity in patterns of aggression during early adulthood even amongst high-risk groups. In attempting to explain behaviour at any point in time, developmental systems theorists emphasise the importance of considering the extent to which it is a function of experiences related to proximal circumstances, as well as a function of distal risk. In particular, longitudinal studies show that changes in person-environment relations during the transition to adulthood can contribute to continuity in problem behaviour for some individuals, while for others they may bring about discontinuity, disrupting pathways of problem behaviour from childhood.

Chapter 2 reviewed evidence for how early adult drinking and changes in work/study roles after the end of high school can increase or decrease adult aggressive behaviour, over and above the effects of earlier trajectories of problem behaviour from childhood. Moreover, this evidence shows that such effects sometimes apply more strongly, or in differing ways, depending on the nature and severity of these earlier trajectories. Drawing on these findings, I concluded in Chapter 3 that there were three possible outcomes regarding the role of emerging adult drinking and institutional role for the bullying – aggression connection. The first possibility is that these proximal transition experiences will have no additional effect on adult aggression once earlier measures of bullying and socio-emotional functioning during school are accounted for. In other words, physical aggression will be rooted in early experience. In the case that drinking and institutional role *do* hold some explanatory power, two further effects are possible. The second possibility is that any effects of the Time 3 transition experiences

for aggression will be additive. In this situation, positive or negative effects of transition experiences would be observed for *all* young people in the study, regardless of developmental history of bullying. Alternatively, the third possibility is that drinking and/or institutional role will exert a *moderating* effect on the relationship between trajectories of bullying during school and adult aggression, acting to open up or close off pathways to adult aggression and bring about discontinuity in behaviour. In this situation, the magnitude or direction of coefficients for the transition experiences would differ in magnitude or direction for members of different bully trajectory groups.

The second goal of this chapter is to test these possibilities. Once the effects of earlier bullying and socio-emotional functioning are accounted for (represented by the *A* and *B* paths in Figure 3.1), do drinking and institutional role explain any variance in Time 3 physical aggression, and what form do such effects take?

Analytic Plan

Analyses are presented in three stages. Stage 1 reports the percentage of young people in each bully trajectory group who engaged in physical aggression during adulthood. These data provide a basic description of the history of these young people's involvement in aggressive behaviour across the life of the study.

Stages two and three examine links between childhood/adolescence and emerging adulthood. I begin by reporting bivariate correlations between Time 3 variables and those from earlier periods. Following this, the stage two analyses assess the extent to which distal measures of bullying and socio-emotional functioning from Times 1 and 2 directly increase the risk of aggression in early adulthood. In the first step, Time 1/Time 2 predictors of Time 3 aggression are examined separately in each age period, in a set of two cross-sections. These regression models use the continuous measure of bullying in each age period. The aim of this multi-phasic analysis is provide

a ‘snapshot’ view of which Time 1 and Time 2 measures in temporal isolation can be demonstrated to increase, or decrease, the likelihood of later aggression. For example, how much variance in adult aggression may be accounted for purely on the basis of what is known about a child’s bullying and socio-emotional functioning in primary school? This tests how early in the ten-year interval between mid-primary school and early adulthood individual characteristics, behaviour and school adjustment might set in motion a trajectory of risk for adult physical aggression. In the second step I take simultaneous account of both time periods in the prediction of adult aggression. To do this, I regress Time 3 aggression on the categorical bully trajectory group measure, while controlling for measures of socio-emotional functioning from Times 1 and 2. This examines whether, controlling for distal factors that may be related to both bullying and aggression, bullying that persists across primary school and high school poses a greater risk for adult aggression than bullying that is limited to either primary school or high school. A further function of both analysis steps at this stage is to empirically identify a sub-set of Time 1 and Time 2 measures that are significant predictors of Time 3 aggression. This sub-set is carried forward into the next analysis stage.

Having assessed the direct impact of past experiences for adult aggression, in the third and final stage I test whether proximal emerging adult transition experiences account for additional variance in aggression beyond the distal factors identified in stage two, and if so, whether these effects vary across different bully trajectory groups (non-bully, child-limited, adolescent-onset and persistent). This is done by creating product terms between bully trajectory group and drinking, and bully trajectory group and institutional role, and adding them to the model predicting Time 3 aggression. This moderated model therefore tests whether the relationship between bully trajectory group and adult aggression is conditional upon Time 3 drinking and/or institutional role.

Stage 1: Bully trajectory group and level of physical aggression in early adulthood

Table 6.1 shows the percentage of young people in each bully trajectory group who engaged in physical violence at Time 3. The first panel simply shows the number of children in each bully trajectory group, the second shows how many individuals in each group reported *any* physical aggression at Time 3, and the third shows how many individuals in each group reported two or more aggressive incidents at Time 3.

First, it is apparent that members of all three of the bullying groups (child-limited, adolescent-onset and persistent) were more than twice as likely as members of the non-bully group to report an incident of physical aggression. However, the members of the persistent bully trajectory group were by far the most likely to report aggression. More than half (56.6%) of this group were physically aggressive as young adults, compared with 42.3% and 37.5% in the child-limited and adolescent-onset groups respectively. Moreover, the persistent bullies were also most likely to report multiple aggressive incidents. Thirty percent of the persistent bullies had engaged in two or more acts of aggression in the last year, compared with rates of 15.4% and 16.7% in the child-limited and adolescent-onset groups. In other words, not only were persistent bullies most likely to be aggressive adults, they were most likely to be frequently aggressive adults.

This situation is illustrated by Figure 6.1, which shows the ‘share’ of Time 3 aggression in each bully trajectory group. The left hand column shows the percentage of the sample that each group represents, while the right hand column shows the percentage of total acts of physical aggression accounted for by members of each group.

Table 6.1: Bully trajectory groups and early adult physical aggression

	Bully trajectory groups		Any aggression		Two or more aggressive incidents	
	N	% of sample	N	% of bully trajectory group	N	% of bully trajectory group
Non-bullies	78	51.6	16	20.5	6	7.7
Child-limited	26	17.2	11	42.3	4	15.4
Adolescent-onset	24	15.9	9	37.5	4	16.7
Persistent	23	15.2	13	56.5	7	30.0
Total	151					

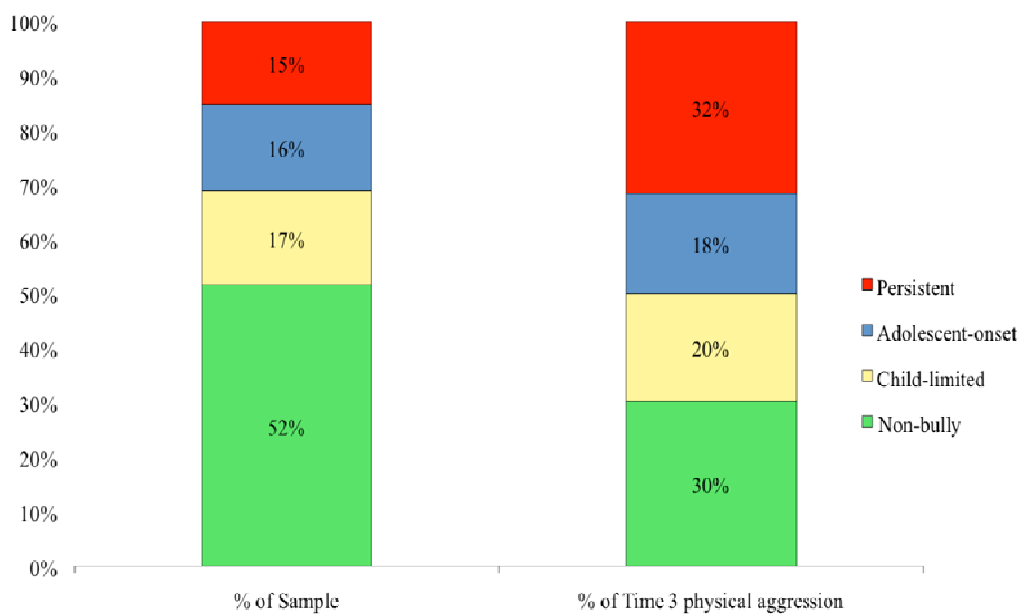


Figure 6.1: Proportion of total physical aggression accounted for by each bully trajectory group relative to their proportion of total sample size

The child-limited and adolescent-onset groups each accounted for about their 'fair share' of Time 3 aggression. For instance, adolescent-onset bullies represent 16% of the sample and 18% of acts of physical aggression. The persistent bullies, on the other hand, accounted for twice their share of aggression, representing 15% of the sample and 32% of acts of physical aggression. Indeed, they accounted for almost as much aggression as the child-limited and adolescent-onset groups combined, and slightly more than that of the non-bullies.

To summarise, these patterns clearly show that there is continuity from school bullying to adult physical aggression, and confirm that the persistently aggressive bullies did become the most frequently aggressive young adults. Nonetheless, many children on bullying trajectories did *not* report adult aggression, nor was adult physical aggression restricted to children who had some experience of bullying during school. One-fifth of the young people who were never classified as bullies during school reported physical aggression, and a small number even reported frequent physical aggression. Thus, bullying clearly contains risk for subsequent violence, but this progression is not inevitable. Moreover, it may be that situational factors during adulthood contain some risk of violence even for young people who do not have prior aggressive tendencies.

These patterns provide a justification for investigating the distal and proximal factors that underlie relations between these bullying patterns and adult aggression. I begin this process in the next section.

Stage 2: Child and adolescent variables as direct predictors of aggression during emerging adulthood

Table 6.2 shows correlations between variables across all three time periods. Time 1/Time 2 correlations were discussed in Chapter 5. The Time 3 measures are

displayed in the lower three rows. The physical aggression outcome was positively correlated with both Time 1 and Time 2 reports of bullying, confirming the presence of some degree of continuity between these two measures of aggression. Moreover, physical aggression was significantly correlated with all other Time 1 and Time 2 predictors with the exception of Time 2 shame displacement. Higher emerging adult physical aggression scores were associated with greater childhood impulsivity, poorer school adjustment, low shame acknowledgement and high shame displacement (Time 1 only). These correlations suggest that factors associated with aggression during the school years may also have operated to increase the risk of adult physical aggression.

The Time 3 transition experiences were significantly correlated with concurrent aggression, though in opposite directions. Consistent with the evidence reviewed in Chapter 2, drinking was strongly positively correlated with aggression ($r = .45$). Institutional role status was negatively related, indicating that participants in an employment-oriented role at Time 3 reported more frequent physical aggression. These experiences were also related to some earlier measures. More frequent early adult drinking was associated with a) more frequent bullying in both primary school and high school, b) less liking for school in primary school and poorer school connectedness in high school, and c) low shame acknowledgement in high school. In contrast, a university-oriented institutional role status was associated with lower childhood impulsivity, and less academic difficulties and higher shame management in adolescence.

However, the strongest correlation with institutional role status, after impulsivity, was parental education. Participants whose reporting parent (mostly mothers) had attended university were themselves more likely to attend university after leaving school. This measure of socio-economic status was not significantly related to any other measure. In contrast, correlations with sex confirmed that boys were more

Table 6.2: Bivariate correlations between variables from all three time periods

		Time 1								Time 2					Time 3	
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	Sex ¹	-														
2	Parent education ²		-													
Time 1																
3	Impulsivity	.19*	-.14	-												
4	Academic difficulties	-.02	-.03	.17*	-											
5	Liking for school	-.27**	-.06	-.18*	-.19*	-										
6	Shame displacement	.14	-.07	.27*	.18*	-.09	-									
7	Shame acknowledgement	-.28**	-.09	-.04	-.07	.30***	.07	-								
8	Bullying	.21**	.04	.30***	.15	-.26**	.41***	-.23**	-							
Time 2																
9	Academic difficulties	.05	-.15	.17*	.45***	-.25**	.22**	-.05	.20*	-						
10	School connectedness	-.30***	-.04	-.04	-.16	.40***	.04	.31***	-.10	-.18*	-					
11	Shame displacement	.05	-.05	.18*	.06	-.09	.42***	.04	.12	.14	.04	-				
12	Shame acknowledgement	-.34***	.04	-.18*	-.09	.41***	-.21*	.34***	-.18*	-.21**	.48***	-.19*	-			
13	Bullying	.23**	-.14	.31***	.17*	-.24**	.25**	-.23**	.31***	.26**	-.22**	.33***	-.45***	-		
Time 3																
14	Institutional role ³	-.21*	.27**	-.31***	-.14	.12	-.06	-.01	-.11	-.23**	.07	-.06	.19*	-.11	-	
15	Drinking frequency	.29***	.11	.14	-.02	-.24**	.16	-.15	.18*	.03	-.22**	.11	-.38***	.21**	-.09	-
16	Physical aggression	.43***	-.02	.21**	.16*	-.24**	.24**	-.19*	.34***	.16*	-.26**	.11	-.37***	.35***	-.28**	.45***

*** $p < .001$. ** $p < .01$. * $p < .05$

¹ Male = 1

² Reporting parent attended university = 1, reporting parent did not attend university = 0

³ University-oriented = 1, employment-oriented = 0

likely to exhibit problematic outcomes at each time point. For example, male gender was associated with more frequent bullying, poorer school adjustment, maladaptive shame management, and more frequent adult physical aggression. Boys were also less likely to attend university, and more likely to drink frequently at Time 3.

The next task was to determine the relative importance of Time 1 and Time 2 variables in predicting Time 3 aggression. As outlined earlier, two regression models were constructed to separately examine Time–Time 3 links and Time 2–Time 3 links. The first model included Time 1 and demographic variables as predictors of Time 3 aggression, while the second included Time 2 and demographic variables as predictors of Time 3 aggression. In each regression model, demographic factors and measure of school adjustment were entered first, followed by shame management variables, and finally, the continuous measure of bullying. These analyses assess direct links between Time 3 aggression and measures of bullying, self-regulation, and school adjustment in each age period. They also permit an initial examination of whether, as suggested in Chapter 3, the influence of socio-emotional variables on adult aggression might be mediated via bullying.

Primary school (Time 1) predictors of adult (Time 3) aggression

Results of the regression of Time 3 aggression on Time 1 impulsivity, school adjustment, shame management, and bullying are summarised in Table 6.3. The final model accounted for a total of 28% of the variance in Time 3 aggression. Although Time 1 bullying was significantly associated with aggression, the great majority of explained variance in the outcome measure was accounted for by sex. With all predictors in the model, young males scored on average .60 units higher on aggression than females. All the other factors taken together accounted for only an additional 4% variance in aggression above this effect. Neither parental education, school adjustment

Table 6.3: Regression predicting adult (Time 3) physical aggression from adolescent (Time 1) impulsivity, school adjustment, shame management and bullying

	Model 1			Model 2			Model 3			
	95% CI for B			95% CI for B			95% CI for B			
	β	Lower	Upper	β	Lower	Upper	β	Lower	Upper	r
Sex ¹	.39***	.41	.92	.36***	.35	.87	.36***	.34	.87	.43***
Parent education ²	.01	-.23	.26	.01	-.23	.26	-.005	-.25	.23	-.02
<i>Time 1 measures</i>										
Impulsivity	.10	-.06	.28	.07	-.10	.25	.04	-.14	.22	.21**
Academic difficulties	.14	-.03	.65	.11	-.09	.59	.11	-.09	.58	.16*
Liking for school	-.09	-.24	.06	-.08	-.23	.08	-.06	-.20	.09	-.24**
Displacement				.15 [†]	-.02	1.11	.08	-.30	.91	.24**
Acknowledgement				-.07	-.89	.34	-.04	-.75	.48	-.19*
Bullying							.18*	.02	.46	.34***
ΔR^2	.24***			.02			.023*			
<i>Full model $R^2 = .28***$</i>										

*** $p < .001$. ** $p < .01$. * $p < .05$ [†] $p = .06$. ¹ male = 1. ² university = 1.

measures, nor shame management variables emerged as significant predictors of aggression, although the coefficient for shame displacement at step 2 approached significance ($\beta = .15, p = .06$).

This was despite the fact that all the predictors, apart from parental education, were significantly related to aggression at the bivariate level. However, as noted in Chapter 5, the predictors are also correlated with each other. In the previous chapter it was apparent that these intercorrelations between Time 1 variables meant that they cancelled each other out in the prediction of Time 2 bullying. The present model shows that a similar situation applies to the prediction of adult aggression: sex, Time 1 measures of socio-emotional functioning, and bullying, account for overlapping rather than unique variance in Time 3 aggression. This is confirmed by an inspection of the squared semi-partial correlations between the predictors and the dependent variable (sr^2 for this model may be found in Appendix C, Table C6.3). For instance, although the bivariate correlation between Time 1 impulsivity and adult aggression is $-.21$, only 0.11% of the total R^2 for this model is attributable to impulsivity.

High school (Time 2) predictors of adult (Time 3) aggression

Results of the regression of Time 3 aggression on Time 2 school adjustment, shame management, and bullying are summarised in Table 6.4. The overall pattern of findings mirrored those above. Once again, bullying did account for variance in the outcome measure over and above the other predictors. After controlling for sex, high school measures of school adjustment and shame management held only weak predictive power for Time 3 aggression. Shame displacement was unrelated to the dependent variable, but shame acknowledgement emerged at step 2 as a significant predictor of lower levels of aggression. This effect failed to achieve statistical significance once bullying entered the model, suggesting that Time 2 bullying might

Table 6.4: Regression predicting adult (Time 3) physical aggression from adolescent (Time 2) school adjustment, shame management and bullying

	Model 1			Model 2			Model 3			
	95% CI for B			95% CI for B			95% CI for B			
	β	Lower	Upper	β	Lower	Upper	β	Lower	Upper	r
Sex ¹	.40***	.42	.93	.35***	.33	.85	.33***	.30	.81	.43***
Parent education ²	.02	-.23	.37	.02	-.21	.28	.04	-.18	.30	-.02
<i>Time 2 measures</i>										
Academic difficulties	.14	-.02	.56	.11	-.08	.50	.08	-.13	.45	.16*
School connectedness	-.11	-.34	.05	-.04	-.26	.17	-.03	-.25	.17	-.26**
Displacement				.04	-.55	.94	-.01	-1.05	.11	.11
Acknowledgement				-.21*	-1.13	-.11	-.14	-.79	.73	-.37***
Bullying							.19*	.03	.47	.35***
ΔR^2	.23***			.03*			.03*			
<i>Full model $R^2 = .28$***</i>										

*** $p < .001$. ** $p < .01$. * $p < .005$. ¹ university = 1. ² male = 1

function to mediate the relationship between inability to acknowledge shame during adolescence and frequency of physical aggression during emerging adulthood. Although the analogous effect involving Time 1 displacement and bullying (refer to the previous Time 1 – Time 3 model above) was weak, these two patterns of results indicate that dysregulation of shame during the school years might explain variance in adult aggression because it increases the risk of bullying.

Bully trajectory group and adult aggression

Thus far I have examined the child and adolescent predictors of adult aggression separately in each age period. Results showed that, after accounting for the effect of sex, the only significant distal predictors of Time 3 aggression were earlier measures of aggression, in the form of bullying during primary school or high school and to some extent, lower shame acknowledgement during high school. However, this multi-phasic analysis does not answer the question of whether bullying that persisted across the primary school-high school transition presented a greater risk for Time 3 aggression, in comparison to bullying that was limited to primary school or began in high school. To answer this question, I estimated a hierarchical regression model in which the four-level categorical bully trajectory group measure (non-bullies, child-limited, adolescent-onset and persistent) replaced Time 1 and Time 2 continuous measures of bullying. The group variable was dummy coded, with non-bullies serving as the reference category. Predictors were entered in three steps: Sex and parent education were controlled on the first step, the three bully trajectory group dummy variables were entered in a block on the second step, and all the Time 1 and Time 2 socio-emotional measures entered on the final step. Although up until this point measures of bullying have been entered *after* socio-emotional predictors, the order was reversed here to determine whether the trajectory group variable was significantly associated with aggression with just

demographic variables controlled. Given the longitudinal nature of the categorical variable, it is in any case not logical to attempt to infer mediation from these models.

Results of this analysis are presented in Table 6.5. The omnibus test of significance for the categorical bully group variable is given by the value of the ΔF statistic at step 2 (with $k - 1 = 3$ *df*, where k is the number of groups), which indicates whether the three dummy coded terms taken together account for a significant gain in the prediction of aggression above the effect of sex. The bully group variable accounted for an additional 4% variance in the outcome measure, which just reached significance ($\Delta F(3, 145) = 2.6, p = .05$). Coefficients for the dummy codes at step 2 reflect deviations from the intercept, or predicted mean score for Time 3 aggression in the reference group (non-bullies, when gender is female), and the predicted mean aggression score for each of the other bully groups. Examination of the unstandardised coefficients shows that, with sex held constant, child-limited bullies scored on average .21 units higher than non-bullies on Time 3 aggression, adolescent-onset bullies .17 units higher, and persistent bullies .51 units higher. There were three comparisons to be made: between the adolescent group and the non-bully group, between the persistent group and the non-bully group, and between the adolescent and persistent groups. For these tests, critical p was set at $.05/3 = .016$ to control for family-wise error rate. From Table 6.5, it can be seen that the slope for the persistent group differed significantly from the non-bully group ($B = .51, t(145) = 2.74, p < .01$), whereas that for the adolescent bullies did not reach significance ($B = .16, t(145) = .92, p = .36$). To compare the persistent bullies with the adolescent bullies, the regression was re-done with the adolescent group as the reference category. This showed that the predicted mean aggression score for persistent bullies was not significantly greater than that for adolescent bullies ($B = .34, t(145) = 1.55, p = .12$).

Table 6.5 Regression predicting adult (Time 3) physical aggression from bully trajectory group, and measures of socio-emotional functioning from both childhood and adolescence

	Model 1				Model 2				Model 3				
	B	β	95% CI		B	β	95% CI		B	β	95% CI		r
Sex ¹	.73***	.43	.48	.98	.62***	.37	.36	.87	.53***	.32	.26	.81	.43***
Parent education ²	-.005	-.003	-.25	.24	-.01	-.00	-.25	.24	.02	.01	-.24	.27	-.02
<i>Bully trajectory group T1-T2³</i>													
Child-limited					.21	.09	-.13	.54	.09	.04	-.27	.44	.04
Adolescent-onset					.16	.07	-.19	.51	-.08	-.03	-.46	.31	.04
Persistent					.51**	.22	.14	.87	.17	.07	-.26	.60	.29***
<i>Time 1 measures</i>													
Impulsivity									.06	.05	-.12	.24	.21**
Academic difficulties									.23	.10	-.15	.61	.16*
Liking for school									-.01	-.00	-.17	.16	-.24**
Displacement									.35	.09	-.33	1.02	.24**
Acknowledgement									-.03	-.01	-.67	.61	-.19*
<i>Time 2 measures</i>													
Academic difficulties									.05	.02	-.29	.38	.16*
School connectedness									-.05	-.04	-.28	.17	-.26**
Displacement									-.01	-.00	-.34	.82	.11
Acknowledgement									-.60*	-.19	-1.21	.01	-.37***
ΔR^2	.19***				.04*				.06				
Full model R2 = .27***													

***p< .001. **p< .01. *p< .05. 1 male = 1. 2 university = 1. 3 reference group= non-bullies

As a set, the Time 1/Time 2 socio-emotional variables did not contribute significantly to the prediction of aggression, although the coefficient for Time 2 shame acknowledgement just reached significance. This contrasts with the model containing just Time 2 predictors (Table 6.4 above) in which the initial significant association between low acknowledgement and more Time 3 physical aggression was reduced to non-significance when bullying entered the model, suggesting a possible mediating effect. The increased salience of acknowledgement in the current model is probably due to a loss of variance in the bullying predictor, arising from the dichotomisation of the Time 1 and Time 2 measures to form the four-level group factor, as well as the slightly higher cut-off used to classify bullies and non-bullies at each period (see Chapter 4 for details).

To summarise, so far I have addressed the first goal of this chapter, which was to examine the predictive power of variables measured in primary school and high school on physical aggression in emerging adulthood. The descriptive statistics presented in stage 1 showed that children who bullied at any point in the study engaged in more physical aggression as adults than children who did not bully. However, the persistent group engaged in the *most* violence during adulthood, at almost twice the rate of young people in the child-limited and adolescent-onset bully trajectory groups.

The first two regression models presented in stage 2 largely confirmed that, controlling for sex, bullying was the main risk factor for adult aggression. When predictors from Time 1 and Time 2 were considered in isolation (Tables 6.3 and 6.4), none of the socio-emotional variables (for example, shame management and school adjustment) accounted for unique variance in aggression over and above bullying and sex, although there was some indication that Time 2 shame acknowledgement was mediated by bullying. Nonetheless, the final analysis in this stage including bully trajectory group as a predictor showed that the association between persistent bullying

and more frequent aggression failed to reach significance once socio-emotional variables from both time periods were included.

I turn now to the second goal of this chapter, which is to test the effects of the Time 3 transition experiences on the course of behaviour from childhood.

Stage 3: Testing the effects of Time 3 drinking and institutional role status for the bullying-aggression connection

To test whether effects of drinking and institutional role were the same or different across bully trajectory groups, a moderated hierarchical regression model was constructed following the procedure outlined by West, Aiken and Krull (1996), and adopted by Roisman, Aguilar and Egeland (2004). To form a two-way interaction term between bully trajectory group and the promoting factor (institutional role) three cross-product terms were created: child-limited x institutional role, adolescent-onset x institutional role, and persistent x institutional role. The above procedure was repeated to form a two-way interaction term between bully trajectory group and the ensnaring factor (drinking frequency): child-limited x drinking frequency, adolescent-onset x drinking frequency, and persistent x drinking frequency. Taken together, each set of three terms represents the two-way interaction between bully group and the promoting/ensnaring factor. As above, the comparison bully group (coded 0 and not included in the model) was the non-bullies. Institutional role was coded 0 = employment oriented; 1 = university oriented, and drinking frequency was mean-centred in order to reduce multicollinearity and facilitate interpretation. Preliminary analyses were conducted to examine the three-way interaction between bully group, institutional role and drinking, but neither this, nor the two-way interaction between institutional role and drinking, was significant.

The aim of this analysis step is to examine the main and interactive effects of drinking and institutional role status on aggression. The parameters of interest in the current model therefore relate to a) the main effects of drinking frequency and institutional role status on Time 3 aggression, and b) the interactive effects of bully trajectory group with drinking frequency and institutional role status on Time 3 aggression. Demographic variables and Time 2 acknowledgement were included as covariates. Because the preceding analysis (Table 6.5 above) showed that sex and Time 2 shame acknowledgement predicted aggression above the effect of bully trajectory group, including these factors as covariates means that the main and interactive parameters relating to the two transition experiences may be interpreted as effects with pre-existing bully group differences in sex and acknowledgement partialled out. The measure of Time 2 acknowledgement was also centred. Thus, when effects of other model coefficients are interpreted with acknowledgement ‘held constant’, this refers to effects with Time 2 acknowledgement at the population mean.

Predictors were entered as follows: the three bully group dummy variables, sex (0= female, 1= male) and Time 2 shame acknowledgement in a block on step 1, drinking frequency and institutional role in a block on step 2, the three bully group x institutional role dummies on step 3, and the three bully group x drinking frequency dummies on the final step.

Results of this analysis are summarised in Table 6.6¹⁴. The omnibus test of significance for an interaction term involving a categorical variable with more than two levels is given by the value of the ΔF statistic (with $k-1$ *df*) for the step at which those terms are entered. This assesses whether the dummy terms, taken as a set, contribute significant prediction to the dependent variable over and above other predictors. This value was significant for both two-way interactions. At step 3, the bully group x

¹⁴ Table 6.6 presents unstandardised coefficients to facilitate interpretation of moderating effects.

Table 6.6: Regression examining whether variation in aggression in emerging adulthood was associated with interactions between Time 1- Time 2 bully trajectory group and Time 3 institutional role and drinking frequency

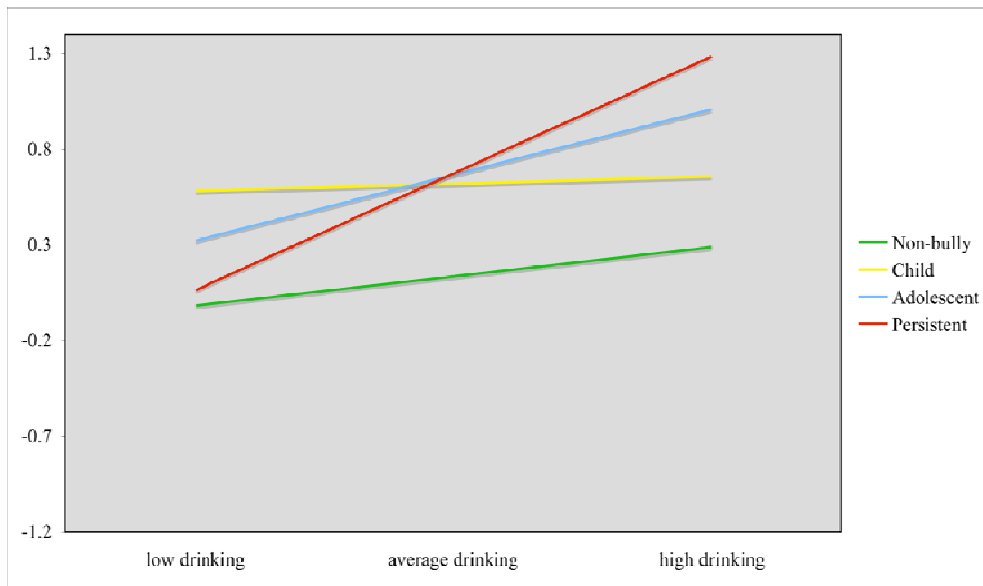
	Model 1			Model 2			Model 3			Model 4		
	B	95% CI for B		B	95% CI for B		B	95% CI for B		B	95% CI for B	
Sex ¹	.53***	.27	.79	.41***	.16	.66	.48***	.24	.72	.50***	.26	.74
Parent education ²	-.007	-.25	.23	.02	-.22	.26	.05	-.18	.27	.04	-.18	.26
Child-limited ³	.19	-.14	.52	.16	-.15	.47	.43	-.01	.86	.49*	.06	.91
Adolescent-onset	.03	-.34	.38	.08	-.26	.42	.54*	.06	1.02	.54*	.07	1.01
Persistent	.34	-.04	.72	.25	-.11	.61	.72***	.29	1.36	.54*	.11	.97
Acknowledgement T2	-.72**	-1.24	-.19	-.36	-.88	.16	-.17	-.68	.34	-.16	-.66	.34
Institutional role ²				-.28*	-.52	-.04	.08	-.22	.39	.08	-.22	.38
Drinking frequency				.17***	.08	.25	.17***	.09	.25	.10	-.02	.22
Child x institutional role							-.50	-1.10	.09	-.56	-1.15	.03
Adolescent x institutional role							-.78	-1.40	-.16	-.77*	-1.37	-.18
Persistent x institutional role							-1.19***	-1.86	-.52	-1.19***	-1.84	-.54
Child x drinking										-.07	-.30	.16
Adolescent x drinking										.13	-.07	.32
Persistent x drinking										.31**	.10	.52
ΔR^2	.23***			.09***			.06**			.04*		
<i>Full model R² = .47***</i>												

*** $p < .001$. ** $p < .01$. * $p < .05$. ¹ male = 1. ² university = 1. ³ reference group = non-bullies

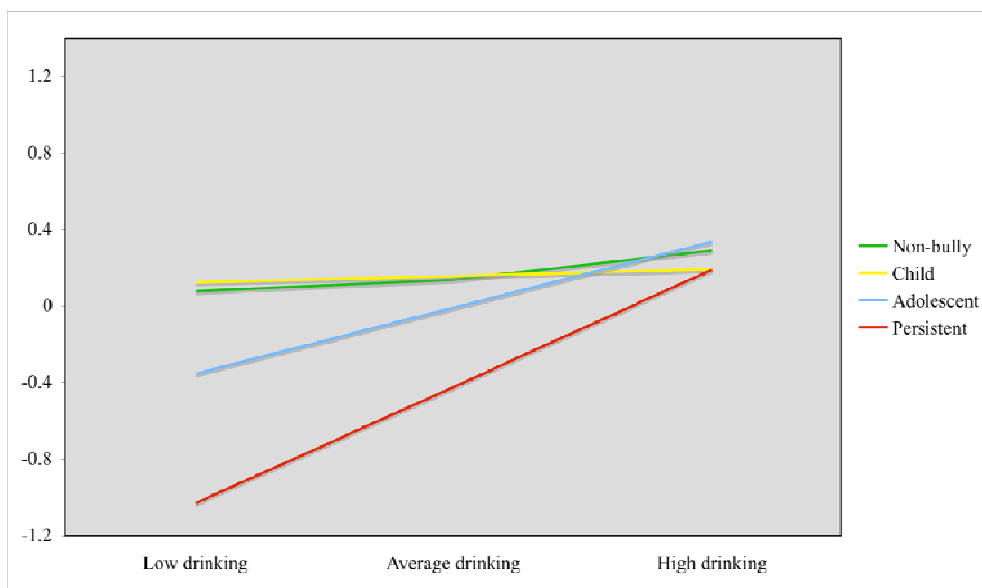
institutional role terms jointly contributed 6% to the prediction of aggression, over and above the other predictors ($\Delta F = 5.15 (3, 139), p < .01$). This indicates that the association between the risk factor (past bullying) and adult aggression varied depending on a participant's institutional role in early adulthood. At step 4, the bully group x drinking frequency terms jointly contributed a further 4% to the prediction of aggression ($\Delta F = 3.71 (3, 136) p < .05$). This indicates that the association between past bullying and adult aggression also varied across different levels of drinking frequency in early adulthood.

Moderating effect of drinking frequency

I begin with an interpretation of the bully trajectory group x drinking interaction, which is displayed in Figure 6.2. The drinking interaction is displayed at different levels of institutional role status, with separate plots for the employment group and the university group. This is necessary because, although there was no three-way interaction, both interaction terms have level of bullying in common. Separate plots make it clear that there are two independent effects present in the data, facilitating discussion of one effect while bearing in mind that another is also at work. They also show that, while there are differences on aggression between the university and employment groups, the pattern of the effect for drinking is similar in both groups. Figure 6.2 therefore shows predicted aggression scores for the four bully groups as functions of different drinking frequencies, when institutional role is either 0 (university oriented, plot A) or 1 (employment oriented, plot B), and acknowledgement and sex are held constant. The values of drinking are high, average and low (one standard deviation above the mean, at the mean, and one standard deviation below the mean, respectively). In the metric of the original variable, these scores translate to low: drinking about once a month, average: drinking a few times a month or once a week, high: drinking three to



A: Employment group
Predicted Time 3 aggression at low, average and high levels of drinking



B: University group
Predicted Time 3 aggression at low, average and high levels of drinking

Figure 6.2: Interaction between bully trajectory group and drinking at the two levels of institutional role: employment-oriented vs. university-oriented sub-groups

four days a week. These frequencies are displayed along the X axis. The green line represents non-bullies, the yellow line represents child-limited bullies, the blue line represents adolescent-onset bullies, and the red line represents persistent bullies.

Figure 6.2 shows that there is a greater ‘spread’ between predicted aggression scores at low, average and high levels of drinking for the adolescent-onset and persistent groups than for the child-limited and non-bully groups. That is, high frequency drinking has a stronger positive association with aggression, and low frequency drinking a stronger negative association with aggression for participants who were bullies in both primary school and high school, and for participants who began bullying in high school, than for participants who were never bullies or who ceased bullying between primary school and high school. The steepest slope in both plots is apparent for the persistent group. The slope for the adolescent-onset group follows the same pattern, although the distance between predicted scores at high and low frequencies of drinking is not as pronounced. Finally, the slopes for child-limited bullies and non-bullies are almost flat, suggesting that for these participants, there was little relationship between the frequency of drinking and early adult aggression.

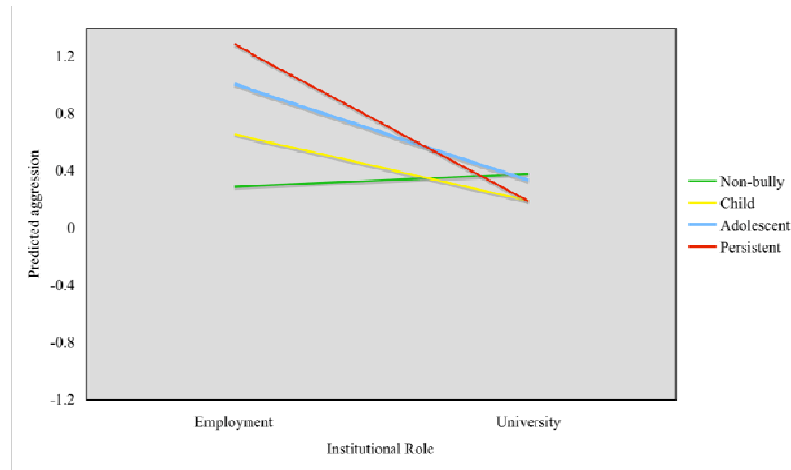
To further probe the interaction, simple slopes analysis was used to assess the size of the regression coefficients of aggression on drinking for each bully group in comparison to the non-bully group. This produces an estimate of the amount of change in the slope for drinking when bully group membership changes from the non-bully group to either the child-limited, adolescent-onset or persistent bully group. As this procedure requires that four *t*-tests be conducted (one for the slope of aggression on drinking for each bully group), a Bonferonni adjustment was used to set *p* for these tests at $.05/4 = .0125$. Results confirmed that, holding everything else constant (i.e. for females, with a university-educated parent, in employment roles, with average scores on Time 2 shame acknowledgement) the positive association between drinking frequency

and aggression was stronger for persistent bullies ($B = .41, t(136) = 4.56, p < .001$) than adolescent-onset bullies ($B = .23, t(136) = 2.56, p = .0115$). In contrast, drinking was not significantly associated with aggression for child-limited bullies ($B = .025, t(136) = .25, p = .80$), or non-bullies ($B = .10, t(136) = 1.86, p = .06$). Taken together, these patterns suggest that frequent drinking exacerbated aggressive behaviour amongst individuals who exhibited aggressive tendencies in the form of bullying during childhood and/or adolescence, but did not do so for those who never exhibited such tendencies, or those whose bullying was limited to primary school.

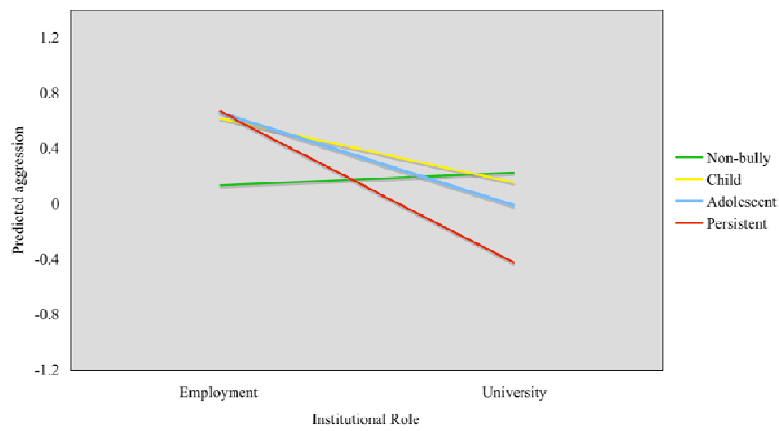
Moderating effect of institutional role status

Figure 6.2 also illustrates the nature of the institutional role x bullying interaction. Disregarding the drinking slopes, it can be seen that the slopes for the three bullying groups (child, adolescent-onset and persistent) are higher in the employment group (plot A) than the university group (plot B). Figure 6.3 displays this effect in more detail. Here, predicted aggression scores for the four bully groups are plotted at the two levels of institutional role (0 = university, and 1 = employment), when drinking is either high (plot A), average (plot B), or low (plot C). The dominant pattern observed in Figure 6.3 is a drop in predicted aggression scores for all three groups of former bullies, in comparison to non-bullies, when participants were in a university-oriented role rather than employment-oriented role. Once again, the greatest drop appears to be within the persistent bullying group. In contrast to the bully groups, predicted aggression scores for the non-bully group do not differ substantially as a function of level of institutional role.

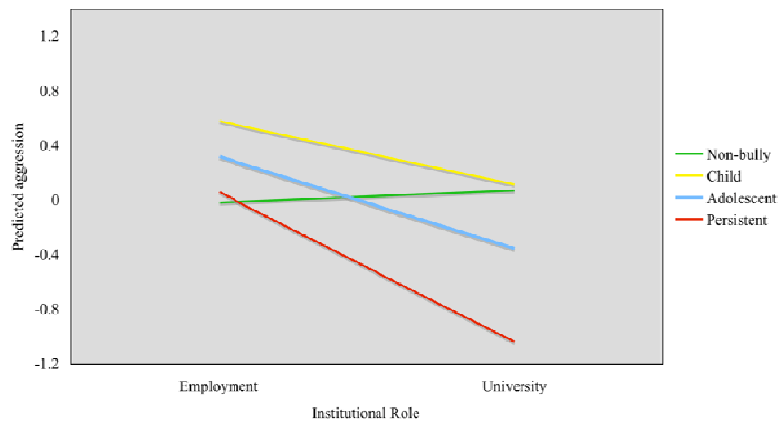
To further examine the institutional role x bully interaction, simple slopes analysis was again used, this time to assess the size of the regression coefficients of aggression on institutional role for each bully group in comparison to the non-bully



A: High frequency drinking
Predicted Time 3 aggression for university vs. employment role status



B: Average frequency drinking
Predicted Time 3 aggression for university vs. employment role status



C: Low frequency drinking
Predicted Time 3 aggression for university vs. employment role status

Figure 6.3: Interaction bully trajectory group and institutional role at three levels of drinking

group. This produces an estimate of predicted change in aggression for a one-unit increase in institutional role (from employment role to university role) at different levels of the categorical bully variable, when all other predictors are equal to 0 (i.e. for females, with a university-educated parent, drinking at an average frequency, who scored at the mean for Time 2 shame acknowledgement). As above, critical p was set at .0125 for each test to keep overall α at .05 across the four tests.

As apparent in Figure 6.3, the simple slope of institutional role for non-bullies was essentially zero ($B = .09$, $t(136) = .62$, $p = .54$), suggesting that for participants with no history of bullying, early adult aggression did not differ based on post-high school institutional role. In contrast, predicted aggression was significantly lower amongst adolescent-onset and persistent bullies who were university students. This effect was most marked for persistent bullies, for whom a one-unit increase in institutional role (from employment to university role) produced a 1.10 unit *decrease* in predicted aggression ($B = -1.10$, $t(137) = -3.76$, $p < .001$, compared to the close-to-zero change in the non-bully group. For adolescent-onset bullies, compared to non-bullies, the change from employment to university role produced a .67 unit decrease in predicted aggression ($B = -.67$, $t(137) = -2.56$, $p = .011$). As shown in Figure 6.3, a negative association between university role and aggression was also present for the child-limited bully group, although the coefficient did not reach statistical significance ($B = -.47$, $t(137) = -1.83$, $p = .07$).

Simple effects of bullying, institutional role and drinking

The interaction effects described above indicate that the size and direction of the relationship between bully trajectory group and Time 3 aggression is dependent on different levels of drinking frequency and institutional role. This means that the simple (or main) effects of bully trajectory group, institutional role status, and drinking

frequency must be interpreted as conditional effects. For example, the simple effect of bully trajectory group can no longer be considered as a constant effect that holds regardless of the values of institutional role and drinking, just as the simple effects of institutional role and drinking cannot be interpreted as effects that hold regardless of level of bully group.

Thus, the values of the coefficients for bully trajectory group, institutional role and drinking frequency shown in the full model in Table 6.6 are interpreted at the value of 0 for all other predictors. This shows that a change in level of the bully group variable (from non-bully to child-limited, adolescent-onset or persistent group) produces a .22 to .23 unit increase in predicted aggression for females who are in employment roles, who have university-educated parents, are drinking at an average frequency, and who reported average shame acknowledgement at Time 2. Similarly, drinking at an average frequency produces a .18 unit increase in aggression for females in the non-bully group, in employment roles, who reported average shame acknowledgement; while being in a university role produces a .06 unit increase in aggression for females in the non-bully group, with university-educated parents, drinking at average frequency, with average acknowledgement scores.

Alternatives to university-oriented vs. employment-oriented roles

For the purposes of the current study, institutional role status was conceptualised as primarily university-oriented or primarily employment-oriented. The analyses reported above suggest that experience of a university-oriented role after high school was particularly beneficial for reducing the likelihood of aggression amongst persistent and adolescent-onset bullies. It was beyond the scope of this study to examine exactly what it was about a university role that was beneficial for these young people. It is, however, necessary to consider the possibility that the apparent promotive effect of

university study might actually be spurious, due instead to some other institutional factor common to the students and workers in this study. As outlined in Chapter 4, the employment and study directions taken after high school by the young people in the study were diverse. The full set of possible combinations of full-and part-time study and work situations formed 20 distinct cells within this sample. Thus, although the institutional role variable contrasts a university-focused role with an employment-focused role, almost 90% of the university students were working, and just over 50% of those in an employment role were either currently undertaking, or had undertaken, some sort of post-secondary vocational education or training (VET). There were two issues to consider. First, was it really just university attendance that was important for young people who were former bullies, or might vocational study also act to disrupt connections between bullying and adult aggression? Second, employment-oriented participants were naturally working twice as many hours as university students, and were less likely than students to be working in part-time or casual jobs. Might this greater or lesser exposure to the workplace either exacerbate or reduce aggression amongst former bullies?

To examine the first issue, a three-level 'study status' variable was created: (1) no post-secondary study or training; (2) undertaken VET; (3) undertaken university study, and cross-product dummy codes were computed as described above to form the two-way interaction between this variable and bully trajectory group. Study status and its interaction with bully trajectory group then replaced institutional role status and its interaction in the regression model, with 'no post-secondary study or training' as the reference category. Other parameters (e.g., drinking and its interaction) remained unchanged. The study status x bullying interaction was significant, but examination of simple slopes showed that the pattern of effects mirrored those reported above.

Attending university was negatively associated with aggression for persistent bullies (*B*

= -1.24, $t(136) = -3.82$, $p < .001$) and adolescent-onset bullies, although the slope for adolescent-onset bullies did not reach significance ($B = -.37$, $t(136) = -1.09$, $p = .27$). Undertaking VET, on the other hand, was not significantly associated with aggression for either persistent bullies ($B = -.26$, $t(136) = -.78$, $p = .44$) or adolescent-onset bullies ($B = .612$, $t(136) = 1.47$, $p = .82$).

Two analyses were undertaken to examine the second issue. First, a three-level 'employment status' variable was created: (1) not working; (2) working in a part-time or casual job; (3) working in a full-time job. This variable and its interaction with bully group were added to the model predicting aggression, but the interaction was non-significant. Moreover, the moderating effect of institutional role status was not substantially altered. Second, the continuous measure of reported hours worked in a typical week and its interaction with bully group were added to the model. Although hours worked was positively correlated with aggression ($r = .28$), it did not account for unique variance above the effect of institutional role status, nor was the interaction with bully group significant.

Chapter summary

This chapter addressed the first set of research questions, concerning (1) the extent to which adult aggression could be predicted from childhood and adolescence bullying and socio-emotional functioning, and (2) whether proximal influences from drinking and institutional role varied according to developmental history of bullying.

The first analysis stage presented a descriptive overview of the percentage of young people in each bully trajectory group who engaged in physical aggression at Time 3. It was apparent that although all groups of former bullies were more likely than non-bullies to be aggressive as early adults, the persistent bullies were by far the most likely to report aggressive incidents.

In the second analysis stage, using the continuous measures of bullying, I concentrated on longitudinal relationships between measures of socio-emotional functioning and bullying during childhood and adolescence with adult aggression. The aim was to test the extent to which Time 3 aggression was predictable from these distal measures of functioning. Results showed that the majority of explained variance in Time 3 aggression was accounted for by sex, with young men far more likely to report aggression. After controlling for sex, Time 1 and Time 2 measures were generally poor direct predictors of Time 3 aggression. When considered in isolated two-period ‘snapshots’, the only factor from both periods to significantly predict Time 3 aggression with all other measures considered was bullying (Table 6.3 for Time 1 predictors and Table 6.4 for Time 2 predictors). With bullying in the models, measures of socio-emotional functioning failed to account for significant additional variance in Time 3 aggression. However, at Time 2, low shame acknowledgement was a significant predictor of aggression until bullying entered the model, suggesting that this aspect of emotion regulation might exert an indirect influence on adult behaviour. The final stage 2 analysis (Table 6.5) introduced the four-group categorical measure of bully trajectory group as a predictor of Time 3 aggression. Despite the fact that bullies had been shown to engage in more frequent physical aggression than non-bullies, and persistent to be even more aggressive than child-limited or adolescent-onset bullies, these differences were not statistically significant in the prediction of aggression once effects of Time 1/Time 2 socio-emotional functioning and especially male gender were controlled. In sum, these analyses would seem to suggest that distal measures of school bullying and socio-emotional functioning were relatively weak predictors of adult aggression.

However, findings of analyses undertaken in the final stage showed that earlier bullying *did* affect Time 3 physical aggression, but only under certain conditions. The aim in this stage was to assess whether any effects of the Time 3 transition experiences

would differ depending on developmental history of bullying. The significant interaction terms reported in Table 6.6 show that the association between bullying trajectory in primary school and high school (Time 1 to Time 2), and physical aggression during emerging adulthood (Time 3) was dependent on both institutional role and frequency of drinking at Time 3. First, in comparison to non-bullies, participants who were persistent bullies (bullies in both primary school and high school) were more likely to be aggressive adults if they were also drinking frequently. In contrast, drinking frequency was essentially unrelated to aggression for non-bullies, child-limited bullies, and adolescent-onset bullies. This is consistent with researchers who argue that drinking is associated with aggression mostly for those individuals who are already violence-prone (Felson, Teasdale, et al., 2008). Second, attending university significantly decreased the likelihood of aggression for persistent bullies, and to a lesser extent for adolescent-onset bullies. In contrast, attending university or not was essentially unrelated to aggression for child-limited bullies and non-bullies. Thus, university attendance during emerging adulthood may have yielded benefits that promoted lower levels of aggression amongst those at higher levels of behavioural risk.

In Chapter 1 I outlined several general developmental perspectives about the roles of distal and proximal factors in the explanation of adult aggressive behaviour. One possibility was that adult aggression would be mostly due to the enduring effect of prior experiences and pervasive individual differences. An alternative possibility was that proximal adult experiences might contain some potential to modify or deflect existing developmental pathways of aggression. In Chapters 2 and 3 I elaborated this idea to suggest that such modifying effects could comprise mediated relationships, in which Time 3 transition experiences would further amplify past bullying trajectories; or moderated relationships, in which Time 3 transition experiences would constitute

positive or negative ‘turning points’ in bullying trajectories for some subgroups of former bullies.

The results presented in this chapter permitted a test of these possibilities. The findings did not support a pure ‘prior risk’ hypothesis, showing that, after sex was controlled, Time 1 and 2 measures were not particularly strong determinants of adult aggression. However, nor did the findings suggest that measures of distal functioning were of *no* consequence for Time 3 behaviour. Instead, they provided support for an interactive relationship between past bullying and proximal adult experiences. Specifically, the effects of ‘past risk’ in the form of bullying were only observed under certain proximal Time 3 conditions: frequent drinking and an employment-oriented role status.

What remains unknown, however, is the extent to which the promotive effect of a university-oriented role and the negative effect of frequent drinking might be related to prior strengths and weaknesses. As noted, none of the socio-emotional variables from Times 1 or 2 emerged as significant predictors of aggression controlling for sex and the bully trajectory group x institutional role status/drinking interactions. One interpretation of these findings would be that the pervasive social and contextual changes contained within the transition to emerging adulthood completely reversed most of the risk for aggression represented by earlier measures. In other words, early disadvantages such as childhood impulsivity, difficulties with schoolwork, and disconnection from the school environment, posed no enduring risk for problematic adult behaviour. This interpretation would be consistent with the developmental systems theories literature demonstrating the power of the adult transition to engender discontinuity in patterns of functioning. However, developmental systems approaches also emphasise the need to consider the possibility that distal and proximal influences may be intertwined. For example, distal factors may act to increase or decrease the likelihood of an individual

encountering a specific proximal influence; similarly, proximal events may mediate the effect of distal factors on an outcome (Schulenberg, et al., 2003). From this perspective, a concentration only on the direct effects of either distal or proximal factors is a limited view of the developmental processes associated with aggression.

Instead, it may be more meaningful to view the Time 3 transition experiences as later links in a sequential chain of events stretching back to childhood. Within this chain of events, some individual and contextual factors will be important at some times and not at others, due to developmental and contextual changes. Thus, although the findings in the current chapter highlight the importance of drinking and institutional role status during the emerging adult transition for altering trajectories of risk, these findings shed no light on the developmental processes that might have contributed to the likelihood that some participants drank more frequently than others, or that some attended university while others entered the workforce or undertook vocational study. Rather, the interaction effects are pointers to the presence of underlying developmental processes that were realised in a set of circumstances that either increased or decreased the likelihood that at-risk individuals would be able to successfully avoid aggressive encounters in adulthood.

What might these processes be? It is highly unlikely that the work and education directions after high school were taken at random; nor that adult differences in drinking were independent of individual differences in earlier patterns of functioning. For example, the evidence reviewed in Chapters 2 and 3 consistently showed that persistently aggressive adolescents are far less likely to attain post-high school educational qualifications, and are also far more likely to drink frequently than less aggressive young people. Longitudinal studies further support the proposal that both self-regulatory and school adjustment aspects of socio-emotional functioning during childhood and adolescence will contribute to the likelihood that participants would

encounter different transition experiences during emerging adulthood. For instance, what are the implications of continuities in shame management and school adjustment over the primary school-high school transition for adult institutional role status and level of drinking?

In Chapters 7 and 8 I address these issues by turning to the second set of research questions: What are the pathways underlying the relationships between school-years bullying, Time 3 institutional and drinking experiences, and adult aggression? How consistent are these pathways across bully trajectory groups? Chapter 7 examines pathways involving drinking, and Chapter 8 examines pathways involving institutional role status. The same analytic approach is used in both chapters, and described in Chapter 7.

CHAPTER 7 :

MECHANISMS IN THE DEVELOPMENTAL COURSE OF AGGRESSIVE BEHAVIOUR FROM CHILDHOOD TO EMERGING ADULTHOOD: DRINKING

Chapter 6 addressed the first set of research questions, which were concerned with (1) the direct effects on Time 3 aggression from distal measures of bullying and socio-emotional functioning, and (2) proximal effects of Time 3 drinking and institutional role on aggression within different bully trajectory groups. The analyses presented showed that these Time 3 transition experiences moderated the developmental course of aggressive behaviour from childhood. The two-way interactions between bully trajectory group and both transition experiences suggested that frequent drinking exacerbated aggressive tendencies for those young people most at risk from past bullying (the persistent bullies), but that attending university in the immediate post-high school years was associated with positive ‘turnarounds’ in behaviour for both at risk groups, the persistent *and* adolescent-onset bullies.

This and the following chapter address this set of questions: (1) What are the pathways underlying the relationships between school–years bullying, Time 3 institutional role and drinking frequency, and adult aggression?, and (2) To what extent are these pathways similar or different across the four bully trajectory groups? In the current chapter I focus on processes that lead to adult aggression via drinking, and in Chapter 8 on processes that lead to aggression via institutional role. While this brings about an artificial separation of simultaneous processes, this limitation is necessary given the small sample size and complexity of possible pathways. Concentrating on just one Time 3 factor at a time permits a more meaningful and interpretable examination of longitudinal relationships than would be possible were the attempt made to construct one ‘grand’ model.

The same structure and analytic approach is employed in both this chapter and the next. The first goal of these chapters is to examine the nature of pathways to institutional role status and drinking during early adulthood for *all* the young people in the sample, regardless of bully trajectory group. This involves an investigation of a chain of events that, directly or indirectly, link Time 1 and Time 2 socio-emotional functioning and bullying to Time 3 drinking/institutional role status. There are two sets of relationships within this chain of events to consider. The first set comprises direct links between variables measured in childhood or adolescence, and emerging adult transition experiences. One hypothetical example would be a positive association between childhood (Time 1) impulsivity and adult drinking frequency. Another would be bullying in high school decreasing the likelihood of attending university. The second set involves indirect links from the school years to Time 3 transition experiences. Might risk factors occurring in childhood explain variance in, for example, emerging adult drinking because they were associated with increased risk factors during high school? The evidence reviewed in Chapter 3 supports a number of different pathways, involving aspects of both emotional/behavioural regulation and school adjustment. For instance, continued positive connections to school over the primary school to high school transition might be realised in a greater likelihood of attending university by Time 3. Another possibility is that the continuity in shame management over the primary school to high school transition will relate indirectly to drinking because children who bully during high school may drink more in early adulthood.

The second goal during the current chapter and Chapter 8 is to place these pathways to institutional role status and drinking frequency in the context of the wider study by assessing how they relate to Time 3 aggression via paths X^3 . This involves testing mediated models that jointly consider pathways between Time 1/Time 2 measures and the Time 3 transition experiences with pathways linking Time 1/Time 2

bullying to Time 3 aggression. As stated, these models do not simultaneously take account of all the relationships depicted in Figure 3.1, but focus only on the clearest and most important links.

The final goal in these chapters is to examine whether Time 1 and 2 predictors highlighted in the path models are similarly associated with different levels of drinking and different institutional roles within each of the four bully trajectory groups. The interactions between bully trajectory group and the transition experiences show that the last ‘link’ in the chain of events culminating in aggression differed across bully trajectory groups, such that for groups other than persistent and (sometimes) adolescent-onset bullies, Time 3 drinking and institutional role status were unrelated to aggressive behaviour. It is therefore possible that the mediated models constructed for the whole sample will not, in fact, apply equally across bully trajectory groups. In the final sections of this chapter and Chapter 8, I consider whether ‘risk factors’ for different institutional roles and frequent drinking identified in the path analyses are associated with these outcomes in different bully trajectory groups.

For convenience, the analysis approach outlined below refers to Time 3 drinking. However, as the same analytic approach is applied to institutional role status in Chapter 8, the following paragraphs are intended to serve as an analytic overview for both chapters. The actual analyses undertaken in Chapter 8 naturally differ in specific details from those reported in the current chapter, and this is noted in the text as it occurs.

Analytic plan

Analyses are presented in four stages. Stage one assesses the first set of relationships outlined above, which involve direct links between Time 1 or Time 2 measures and Time 3 drinking. The procedure employed parallels the multi-phasic

prediction of Time 3 aggression from either Time 1 or Time 2 measures, presented in Chapter 6. Here, Time 3 drinking replaces aggression as the dependent variable. In the first step I use separate hierarchical regression analyses with predictors from each time period in isolation to identify which child and adolescent factors directly predict drinking. As in the previous chapter, the aims of this exercise are, first, to test how early precursors of emerging adult drinking may be observed, and second, to gain a subset of variables that significantly predict the Time 3 outcome. In the second step, this sub-set is used to estimate a single model that simultaneously accounts for both primary school and high school periods in the prediction of adult drinking.

Having thus established which Time 1 and Time 2 factors directly predict drinking, in stages 2 and 3 I consider the possibility that the effect of childhood variables on emerging adult drinking might be mediated by high school variables. There are two links in the chain of events that connects childhood variables to post-high school drinking via mediating high school factors. The latter link—relationships between Time 2 measures and drinking—was examined in stage 1. In stage 2, I take a step back in time to examine the earlier link in this chain—paths between primary school (Time 1) and high school (Time 2). This is done by treating the Time 2 predictors of drinking, identified in stage 1, as dependent variables in regression analyses, with Time 1 measures serving as independent variables.

In stage 3 I put the pieces together by combining what was learned in the first two stages about connections to drinking with what was learned in Chapter 6 about connections to aggression. Using path modelling with measured variables, I explore how several distal measures may be interrelated and how they may jointly help to explain how Time 3 drinking affects concurrent physical aggression. The approach to model building is selective, focusing only on variables that have emerged as important in the earlier analyses. Decisions about construction are made based on the need to

create a parsimonious model, while still including enough information to illustrate important relationships. In this I am guided by theoretical considerations, evidence from the longitudinal studies reviewed in earlier chapters, and findings from Chapter 5 and stages 1 and 2 of the current chapter. The model is not intended to replace these more detailed analyses; rather, it is an alternative way of summarising a limited portion of the relationships examined in earlier stages.

The first three stages examine pathways for the whole sample. However, as discussed, the moderating effects of drinking and institutional role status on the relationship between bully trajectory group and Time 3 aggression reported in Chapter 6 raise the possibility mediated models will also differ across groups. Stage four addresses this issue. In Chapter 4 I discussed reasons why analytic techniques such as multiple-group path modelling or analysis of moderated mediation were unfeasible with the current sample size and the multinomial nature of the bully trajectory group moderator. In the final stage I instead rely on simple descriptive statistics and figures to visually examine the patterning of model variables across the four bully trajectory groups. This approach is described later in the chapter.

Stage 1: Child and adolescent predictors of drinking frequency during emerging adulthood

The first set of analyses was designed to identify Time 1 and Time 2 predictors of adult drinking frequency. Two hierarchical regression analyses were conducted to separately examine links between Time 1 variables and adult drinking and Time 2 variables and adult drinking. For each analysis, variables were entered in the following four steps. Demographic predictors including sex (1= male) and parental education (1= attended university) were entered on the first step, and socio-emotional variables were

entered in a block at the second step. Shame management variables were entered in a block on the third step, and bullying was entered at step four.

Table 7.1 summarises results from the final model (with all predictors in the model) for both analyses¹⁵. The left-hand panel presents estimates for the final model of the Time 1–Time 3 analysis, and the right-hand panel presents estimates from the final model of the Time 2–Time 3 analysis. As shown, men reported more frequent drinking during emerging adulthood than women. After controlling for this effect, none of the childhood measures of socio-emotional functioning, nor bullying, were significant direct predictors of drinking.

Among the Time 2 variables, school adjustment (school connectedness and academic difficulties) did not account for variance in drinking after controlling for sex. The entry of shame acknowledgement and displacement at the third step, however, produced a 7% increment in explained variance in drinking ($\Delta F(2, 144) = 6.5, p < .01$). Inspection of the regression coefficients revealed that this effect was almost entirely due to the negative association between shame acknowledgement and the dependent variable, indicating that a lesser capacity to acknowledge feelings of shame in the context of bullying during high school was associated with an increased likelihood of more frequent drinking during emerging adulthood. Shame displacement, in contrast, neither increased nor decreased the frequency of drinking. In line with the previous analysis using Time 1 predictors, Time 2 bullying did not significantly predict drinking, contributing only 0.2 percent additional variance after controlling for sex and shame acknowledgement.

The next step was to examine whether emerging adult drinking was more or less likely amongst the groups of young people with different developmental histories of bullying, taking account of the effects of sex and Time 2 acknowledgement. To test this,

¹⁵Detailed tables showing results for each step of the regression analyses may be found in Appendix C. Table C7.1A (Time 1- Time 3 drinking), and Table C7.1B (Time 2- Time 3 drinking).

Table 7.1: Summary of regression models predicting adult (Time 3) drinking frequency from child (Time 1) school adjustment, shame management and bullying and adolescent (Time 2) school adjustment, shame management and bullying

Time 1 -Time 3, final model					Time 2 -Time 3, final model				
	95% CI for B					95% CI for B			
	β	Lower	Upper	r		β	Lower	Upper	r
Sex ¹	.21*	.12	1.1	.29***	Sex ¹	.18*	.05	.99	.29***
Parent education ²	.11	-.13	.78	.11	Parent education ²	.13	-.07	.80	.11
<i>Time 1 predictors</i>					<i>Time 2 predictors</i>				
Impulsivity	.07	-.19	.47	.14					
Academic difficulties	-.07	-.93	.33	-.02	Academic difficulties	-.04	-.65	.41	.03
Liking for school	-.15	-.53	.04	-.24**	School connectedness	-.01	-.41	.35	-.22**
Displacement	.11	-.42	1.83	.16	Displacement	.04	-1.06	1.71	.11
Acknowledgement	-0.4	-1.42	.89	-.15	Acknowledgement	-.29**	-2.67	-.55	-.38***
Bullying	.03	-.34	.48	.18*	Bullying	.05	-.29	.51	.21**
$R^2 = .15^{**}$					$R^2 = .19^{***}$				

*** $p < .001$. ** $p < .01$. * $p < .05$. ¹ male = 1. ² university = 1

Time 3 drinking was regressed on demographics, bully trajectory group (represented by dummy variables, with non-bullies serving as the reference group) and Time 2 acknowledgement. In this hierarchical analysis, demographics were entered at step 1, the three bully group dummy variables at step 2, and Time 2 acknowledgement at step 3. Table 7.2 summarises the results of these analyses. At step 2, the set of bully trajectory group variables explained only 3% additional variance in drinking above that accounted for by sex, which was a non-significant amount ($\Delta R^2 = .03$, $\Delta F(3, 145) = 1.8$, $p = .15$). Although the persistent bullies were more likely to drink frequently in early adulthood compared to non-bullies ($B = .77$, $t(145) = 2.27$, $p < .05$), this effect failed to reach significance with Time 2 shame acknowledgement in the model. In the final model, a one unit increase in Time 2 shame acknowledgement was associated with a more than 1.5 unit decrease in Time 3 aggression ($B = -1.67$, $t(145) = 3.50$, $p < .01$).

These findings show that, after controlling for sex, the only distal factor that was directly associated with more frequent adult drinking was a lesser capacity to acknowledge shame during high school. This is interesting because the analyses reported in Chapters 5 and 6 highlighted the significance of adolescent shame acknowledgement for continuity in aggression. In the preliminary Time 1- Time 2 analyses it was found that low acknowledgement was a predictor of high school bullying, which, in combination with Time 3 drinking, predicted aggression for persistent bullies. Thus, it appears that poor shame acknowledgement increased the likelihood of adult aggression both via its effect on Time 2 bullying, and via its effect on Time 3 drinking. This focuses attention on shame acknowledgement as a potential adolescent mediator in the pathway from childhood bullying to early adult aggression. What childhood factors might contribute to continued adaptive or maladaptive acknowledgement of shame in high school? Shame management theory posits that school 'safe space' is critical to adaptive shame management, and Braithwaite and

Table 7.2: Regression predicting adult (Time 3) drinking frequency from sex, bully trajectory group and adolescent (Time 2) shame acknowledgement

	Step 1				Step 2				Step 3				<i>r</i>
	95% CI for B				95% CI for B				95% CI for B				
	B	β	Lower	Upper	B	β	Lower	Upper	B	β	Lower	Upper	
Sex ¹	.86***	.30	.41	1.31	.69**	.24	.22	1.15	.49*	.17	.022	.95	.29***
Parental education ²	.33	.12	-.11	.78	.33	.12	-.12	.78	.33	.12	-.10	.77	.11
<i>Bully trajectory group T1-T2[†]</i>													
Child-limited					.29	.07	-.32	.90	.26	.07	-.33	.85	.03
Adolescent-onset					.26	.05	-.38	.91	-.06	-.04	-.71	.58	.01
Persistent					.77*	.20	.10	1.44	.38	.10	-.30	1.06	.24**
Acknowledgement (Time 2)									-1.67**	-.30	-2.62	-.72	-.38***
ΔR^2		.09***				.03				.07**			
<i>Full model R² = .19***</i>													

*** $p < .001$. ** $p < .01$. * $p < .05$ [†] reference group = non-bullies. ¹ male = 1. ² university = 1

colleagues' (2003) study showed that less perceived hassles with schoolwork at Time 2 was associated with more shame acknowledgement, after controlling for Time 1 measures of these factors. However, the authors did not consider the extent to which continuity in these aspects of school adjustment mediated continuity in shame acknowledgement. The next section addresses this question.

Stage 2: Childhood predictors of adolescent shame acknowledgement

A single hierarchical regression analysis was used to examine factors associated with continuity in shame acknowledgement between primary school and high school. Variables were entered in two steps. Demographic and all Time 1 measures, including bullying, were entered on the first step, followed by Time 2 measures of school adjustment (school connectedness and perceived academic difficulties) on the second step.

The results of this analysis are presented in Table 7.3. Focusing on the first step, at which Time 1 variables were entered, it is apparent that significant predictors of Time 2 acknowledgement included sex, Time 1 liking for school, and both Time 1 shame management variables. Higher Time 2 acknowledgement, representing more adaptive regulation of shame, was associated with female gender, higher Time 1 acknowledgement, lower Time 1 displacement, and greater Time 1 liking for school. Parental education, impulsivity, academic difficulties, and bullying did not account for significant variance in the dependent variable.

The addition of the proximal Time 2 school adjustment variables (academic difficulties and school connectedness) at the second step produced a significant increment in the overall prediction of Time 2 acknowledgement $\Delta F(2, 140) = 10.4, p < .001$). This was almost entirely due to the strong contemporary relationship between Time 2 school connectedness and the shame acknowledgement outcome. Children who

Table 7.3: Regression predicting adolescent shame acknowledgement from Time 1 measures and Time 2 school adjustment

	Step 1			Step 2			
	95% CI for B			95% CI for B			
	β	Lower	Upper	β	Lower	Upper	r
Sex ¹	-.18*	-.17	-.02	-.12	-.14	.02	-.34***
Parent education ²	.05	-.04	.10	.04	-.05	.09	.04
<i>Time 1 predictors</i>							
Impulsivity	-.06	-.07	.03	-.07	-.07	.03	-.18*
Academic difficulties	.01	-.10	.11	.08	-.05	.16	-.09
Liking for school	.28***	.04	.13	.17*	.00	.09	.41***
Displacement	.23**	-.39	-.02	.18*	-.41	-.06	.34***
Acknowledgement	-.18*	.09	.47	-.21**	.04	.40	-.21*
Bullying	.07	-.04	.10	.07	-.04	.09	-.18*
<i>Time 2 predictors</i>							
Academic difficulties				-.08	-.14	.04	-.21*
School connectedness				.33***	.07	.19	.48***
ΔR^2	.003						
Full model $R^2 = .38***$							

*** $p < .001$. ** $p < .01$. * $p < .05$. ¹ male = 1. ² university = 1

reported greater perceptions of connectedness in high school also reported higher shame acknowledgement scores, after controlling for the effects of sex, pre-existing shame management skills and the Time 1 measure of school liking. Although sex and the earlier measures of liking for school and shame acknowledgement continued to exert a direct effect on Time 2 acknowledgement, there were substantial drops in the coefficients for sex (to nonsignificant) and Time 1 liking for school, and a smaller drop for Time 1 acknowledgement. This pattern suggests that the effects of sex, Time 1 liking for school, and Time 1 acknowledgement on Time 2 acknowledgement may be partially mediated by Time 2 school connectedness.

This analysis demonstrates, first, that shame acknowledgement exhibited a degree of stability across the primary school- high school transition, perhaps reflecting children's inherent individual capacity for self-regulation. It also confirms the importance of perceived school context to adaptive shame management. More liking for school in childhood was associated with more adaptive shame acknowledgement during high school. Furthermore, there was evidence that continued shame acknowledgement across the primary school-high school transition was associated with the formation of a good connection to the high school context. This is one of the possibilities that will be explored in the next section.

Stage 3: Interconnecting path model

In stage 1 I examined direct effects of Time 1 and Time 2 variables on drinking at Time 3. It was shown that, with the exception of male gender, the only direct predictor of frequent emerging adult drinking was poor high school shame acknowledgement. In stage 2 I took a further step back in the chain of events to examine factors that influenced continuity in shame acknowledgement across the primary school- high school transition. It was shown that adaptive acknowledgement at

Time 2 was related to adaptive acknowledgement at Time 1, as well as liking school at Time 1. Furthermore, the findings suggested that Time 2 school connectedness mediated the effects of sex, Time 1 liking for school, and Time 1 shame acknowledgement, on Time 2 acknowledgement. These findings demonstrate how the two important elements of socio-emotional functioning examined in this study, emotion regulation and school connectedness, relate to each other over the primary school to high school transition. The results from the first stage show that it is these interrelationships between perceived environment and emotional functioning, rather than behavioural factors such as bullying, that increased the risk for early adult drinking. In the sections that follow, I refer to the Time 1 and Time 2 predictors of drinking as a ‘socio-emotional’ pathway.

This section integrates these socio-emotional predictors of drinking with findings from Chapter 5 regarding the predictors of bullying and aggression. I consider, first, how drinking mediates the effect of Time 1 and 2 socio-emotional measures on aggression. Moreover, I consider how these distal relationships between school adjustment and shame management relate to adult aggression via links with high school bullying. Path analysis with measured variables was used to test a model of these processes. This model is not intended to be a substitute for the step-by-step analyses reported earlier in this chapter and in Chapters 5 and 6. Rather, it is an alternative way of summarising a portion of these relationships and a useful tool for beginning to make interpretations about possible underlying developmental processes. An additional advantage of path modelling over OLS regression is the facility to simultaneously assess the significance of direct and indirect model parameters with bootstrapping methods that are more appropriate than the Sobel test for testing effects with small sample sizes.

Selection of variables

The overall approach to model construction was to be inclusive enough to estimate important relationships, while balancing the need to create a parsimonious model. To these ends, decisions about selection of variables for inclusion and the modelling of paths between them were guided by theoretical considerations, previous research, and the findings of earlier analyses. The primary focus in the model is on mediated pathways to aggression that involve drinking. When selecting variables, preference was therefore given to those involved in these relationships. A variable was considered for inclusion if:

a) the variable was identified at stage 1 of the current chapter as a Time 1 or Time 2 predictor of Time 3 drinking (see Table 7.1). Apart from sex, the only qualifying variable was Time 2 shame acknowledgement.

b) the variable was identified at stage 2 of the current chapter as a predictor of Time 2 shame acknowledgement (Table 7.3). Of the suitable contenders, Time 1 acknowledgement, Time 1 liking for school, and Time 2 school connectedness were selected for inclusion. Time 1 displacement was excluded for several reasons. Given the sample size, a practical reason for exclusion was to minimise the number of model parameters. Another reason was to focus attention on the interrelationships between perceived school environment and shame acknowledgement. While both Time 1 and Time 2 acknowledgement were associated with more positive feelings about school concurrently and longitudinally, displacement was uncorrelated with these factors (see Table 6.2), and unrelated in regression analyses. This shows that perceptions of ‘safe space’ are mostly relevant to the acknowledgement dimension of adaptive shame management, while displacement may be influenced by a different set of individual or contextual factors. Furthermore, earlier analyses have highlighted the importance of Time 2 shame acknowledgement in predicting both Time 3 aggression and Time 3

drinking. While it would have been interesting to explore the processes involved in childhood shame displacement and adolescent failure to acknowledge, in the context of the present study it was deemed more interesting and relevant to concentrate on a more detailed examination of the way in which shame acknowledgement over the primary school- high school transition was influenced by the child's perceived school context, and how these processes related to adult drinking and aggression.

c) the variable was identified in Chapter 6 (Tables 6.3 and 6.4) as a predictor of Time 3 aggression. Therefore, both Time 1 and Time 2 measures of bullying were selected. Here, the continuous measures of bullying are modelled. Implications of the bully trajectory group interactions will be considered in the next section.

d) the variable was identified in Chapter 5 (Table 5.4) as a Time 1 predictor of Time 2 bullying. These variables included Time 1 measures of shame displacement, shame acknowledgement and impulsivity, although the shame variables did not uniquely predict Time 2 bullying above effects of Time 1 bullying. The exclusion of displacement has been discussed. Time 1 impulsivity was also omitted. This was not because it was unimportant as a predictor of Time 2 bullying, though the relationship was fairly weak. The exclusion was in order to limit the focus to predictors of Time 3 drinking, and Time 1 impulsivity did not emerge as a predictor of either Time 2 acknowledgement or Time 3 drinking.

Model construction

Figure 7.1 outlines the proposed model that was developed to explore whether and to what extent drinking could be seen as mediating the effect of the selected Time 1 and Time 2 variables on Time 3 aggression. Decisions about the modelling of links between variables are described below. One basic decision was to treat each Time 1

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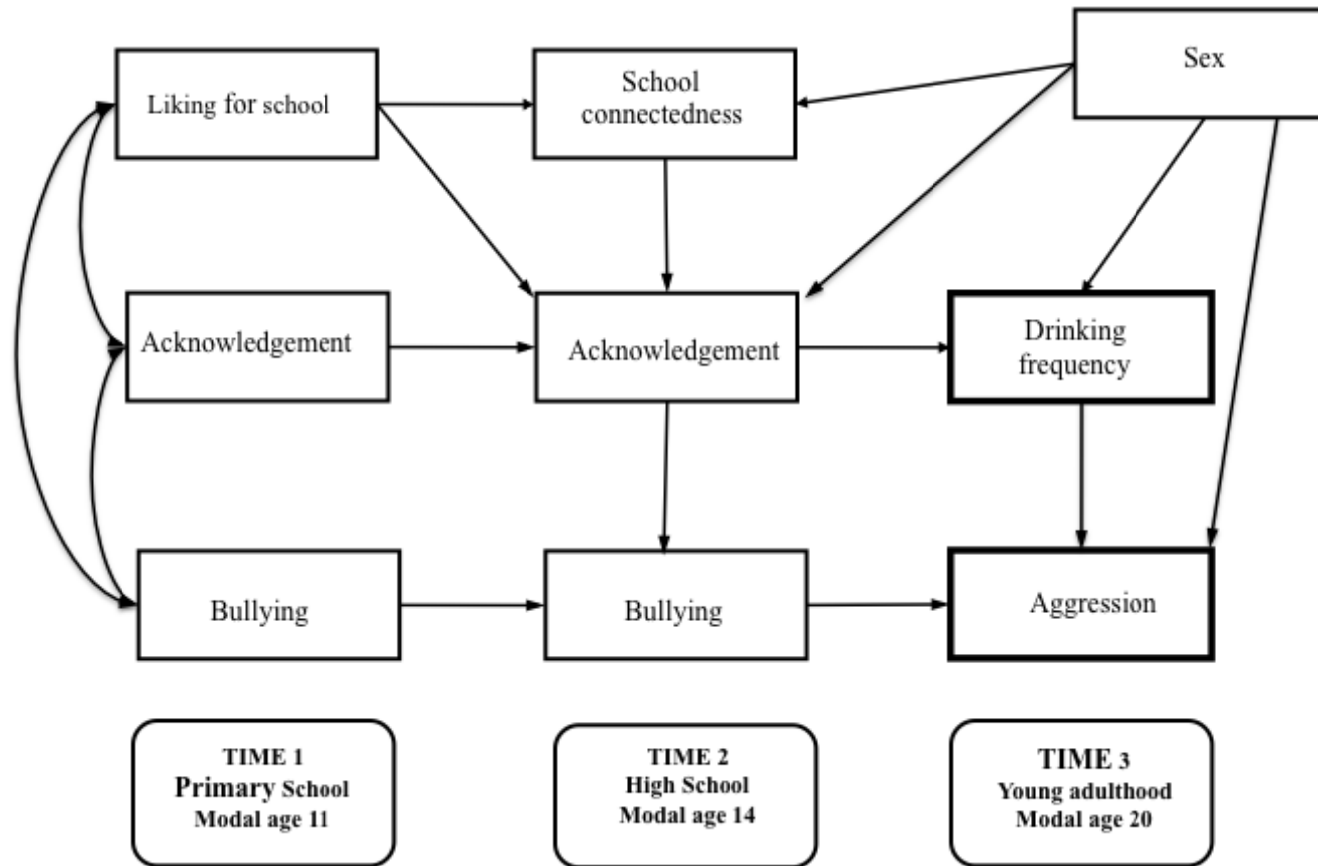


Figure 7.1: Proposed model: Pathways to aggression via drinking

predictor as a direct predictor of the Time 2 version of the same construct. This indicates stability over the three-year interval between primary school and high school.

The central variable in this model is Time 2 shame acknowledgement, which was modelled as both a predictor of Time 3 drinking, and as a mediator of the relation between Time 1 measures and Time 3 drinking and aggression. First, Time 2 acknowledgement was expected to indirectly predict Time 3 aggression via both Time 2 bullying and Time 3 drinking. This prediction was made based on the Chapter 6 model predicting aggression from Time 2 measures (Table 6.4), and using the Time 2 continuous measure of bullying. When the continuous measure was replaced with the categorical measure of Time 1–Time 2 bully trajectory group, Time 2 shame acknowledgement continued to account for variance in aggression, beyond the effect of bully group (Table 6.5). I suggested that these contradictory patterns might be due to loss of variance in bullying arising from the procedures used to create the categorical bully trajectory group variable. As the Time 1 and Time 2 continuous measures are used here, Time 2 acknowledgement is not expected to be significantly directly associated with Time 3 aggression beyond the effect of bullying.

Secondly, stepping back to the earlier part of the model, Time 1 acknowledgement was expected to indirectly predict Time 2 bullying and Time 3 drinking via Time 2 acknowledgement. Thirdly, Time 1 liking for school was expected to indirectly predict Time 2 acknowledgement via Time 2 school connectedness. In other words, it was assumed that adolescent acknowledgement would mediate effects of distal and proximal school adjustment on contemporary bullying and future emerging adult drinking. It was further expected that Time 1 liking for school would exert a direct effect on Time 2 acknowledgement. However, the other potential cross-construct arrow—a direct effect of Time 1 acknowledgement on Time 2 school connectedness—was omitted. Although it might be possible that good shame management skills in

childhood would facilitate adjustment to high school, Ahmed's theory conceptualises this relationship as flowing in the other direction (Braithwaite, et al., 2003).

Sex was expected to exert both direct and indirect effects at several points in the model. First, the current chapter and Chapter 6 showed that sex was a strong direct predictor of both drinking and aggression. Second, the analyses examining predictors of Time 2 acknowledgement suggested that the relationship between sex and acknowledgement was partially mediated by school connectedness.

Finally, it was assumed that Time 2 bullying would be directly related to Time 3 aggression. However, the direct link between Time 1 bullying and aggression was not included. This decision was made based on evidence from longitudinal studies of aggression showing that individuals who exhibit persistent aggressive behaviour throughout childhood and adolescence are most likely to be violent as adults, compared to those whose aggression is limited to childhood (Moffitt, 2007; Roisman, et al., 2004).

Path modelling with measured variables was used to test this model and to provide a simultaneous estimation of the parameters. This analysis was conducted using AMOS 6.0 (Arbuckle, 2005) with maximum likelihood estimation. The covariance matrix was used in the analysis. Analysis proceeded as follows. The proposed model was fitted first. Next, several alternative nested models were tested. Goodness-of-fit statistics were used to assess overall model fit and to compare the proposed model with the alternative models. In the last step, the magnitude of direct and indirect effects within the final model was examined. The results of this exercise are described in the next section.

Model testing

Goodness-of-fit indices for the proposed model and alternative models are presented in Table 7.4. Chi-square for the overall model tests whether the actual

Table 7.4: Mediated model of pathways to aggression involving drinking: Fit statistics for proposed and alternative models

	Proposed optimal model	Alternative Time 2 acknowledgement models		
		1. Direct model	2. Indirect model	3. Full model
χ^2	16.46	30.94	36.11	11.67
df	17	19	19	16
Bollen-Stine bootstrap <i>p</i>	.62	.10	.04	.81
Comparative Fit Index (CFI)	1.00	.954	.934	1.00
Root Mean-Square Error of Approximation (RMSEA) and 90% CI	.00 (.00 - .072)	.065 (.013 - .105)	.077 (.037 - .116)	.00 (.00 - .053)
Standardised Root Mean Square Residual (SRMR)	.045	.072	.075	.038

covariance matrix differs significantly from the matrix implied by an estimated model. One problem, however, was that the data were shown to lack multivariate normality. This was indicated by a Mardia coefficient of 9.61, for which values greater than 1.96 signal the presence of significant kurtosis. Although studies (MacKinnon, Lockwood, & Williams, 2004; Shrout & Bolger, 2002) suggest that regression coefficients remain fairly accurate under conditions of non-normality, the maximum-likelihood χ^2 statistic for the model will be inflated, increasing the risk of Type I error. The Bollen-Stine bootstrap provides a modification of the significance of the model χ^2 , adjusted for lack of normality. Accordingly, Table 7.4 reports Bollen-Stine bootstrapped *p* values for model χ^2 . Other measures¹⁶ of model fit included the comparative fit index (CFI), the

¹⁶ The comparative fit index (CFI) provides an estimate of the relative lack of fit of an estimated model versus the independence baseline model and is particularly suitable for small sample sizes; it has a range of 0 – 1 with values greater than .95 indicative of a good fit (Bentler, 1990). The root mean square error of approximation (RMSEA) estimates the lack of fit in a model compared to the saturated model. Values below .05 indicate a close fit relative to the degrees of freedom, and below .08 a reasonable fit. The root mean square residual (RMR) is a measure of the average difference between the actual covariance matrix and the covariance matrix implied by the model. The standardised version (SRMR) has a range of 0 to 1 and values below .08 suggest a good model fit (Hu & Bentler, 1999).

root mean square error of approximation (RMSEA), and the standardised version (SRMR).

The proposed model fitted the data quite well, and accounted for 34% of the variance in Time 3 aggression. Three alternative models were tested. These were designed to assess alternative representations of the inter-relationships between sex, Time 1 shame and school context, and Time 2 shame and school context. These three models are presented in Figures (7.2 (A) to (C)). The first two alternative models each involved fewer paths than the proposed model. Model A was a ‘direct links only’ model, in which only direct links between sex, Time 1 liking for school and Time 2 school connectedness, and Time 1 and Time 2 acknowledgement, were included. That is, sex and Time 1 acknowledgement were set to directly predict Time 2 acknowledgement, and liking for school was set to directly predict Time 2 school connectedness, but cross-construct links between, for example, Time 1 shame acknowledgement and Time 2 school connectedness, were omitted. In the second alternative model (Figure 7.2 B), only indirect links were included: sex was set to predict Time 2 acknowledgement indirectly via school connectedness, Time 1 acknowledgement was linked to Time 2 school connectedness, and Time 1 liking for school was linked to Time 2 acknowledgement. The final model (Figure 7.2 C) was a ‘full’ model in which all direct and indirect links between sex, Time 1 liking for school and acknowledgement, and Time 2 school connectedness and acknowledgement were included. Each of these models was compared with the proposed optimal model by testing the difference between proposed and alternative χ^2 values. This takes the form of a χ^2 test with df equal to the difference between the df in the two models. A significant result indicates that the alternative model fits the data better or worse than the original model.

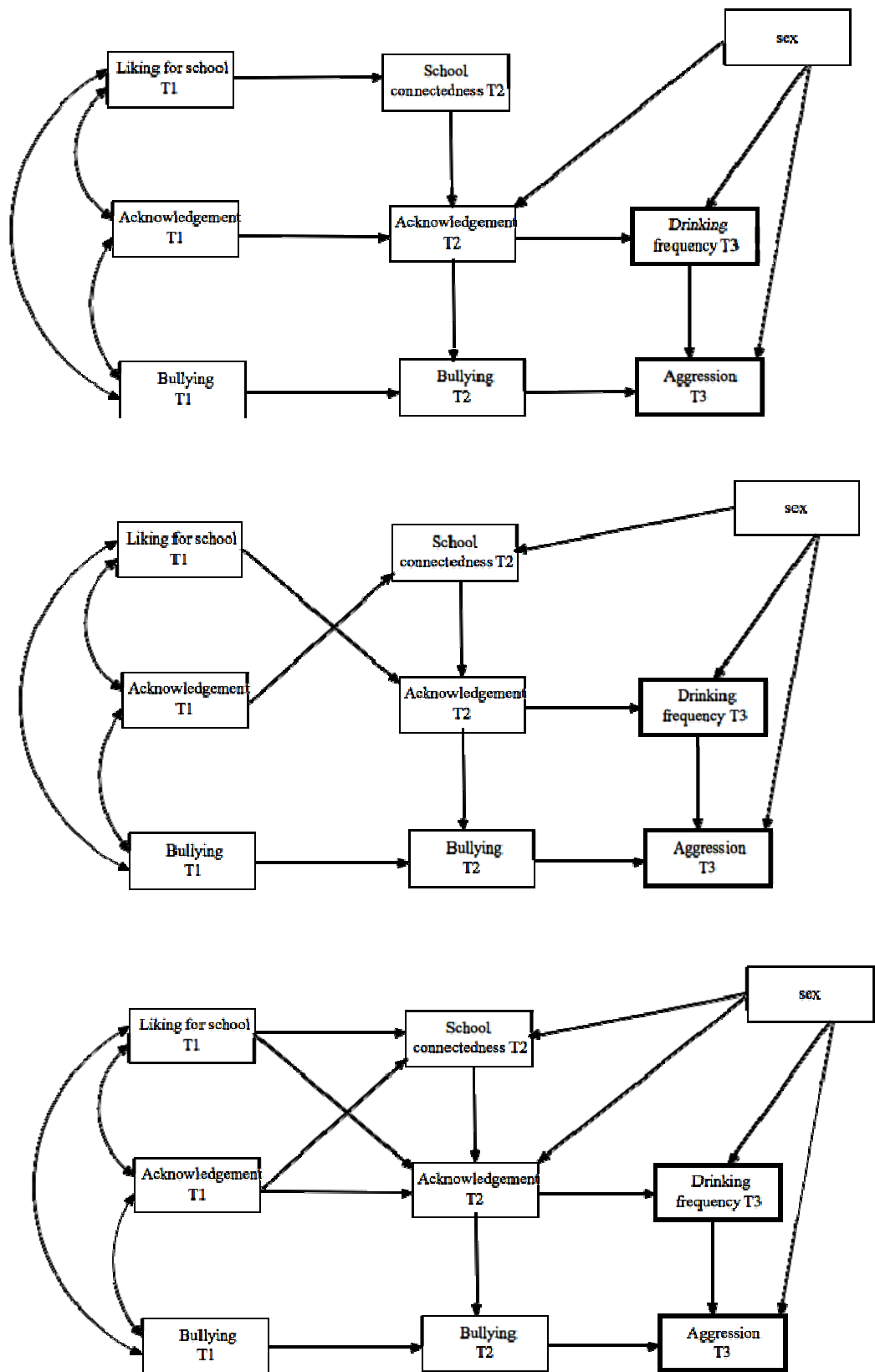


Figure 7.2: Alternative model

Both the direct-only and indirect-only models were more parsimonious than the original model, but both fitted the data significantly worse (direct $\Delta\chi^2(2) = 14.48, p < .001$; indirect $\Delta\chi^2(2) = 19.65, p < .001$). This indicated that at least some direct and indirect paths between sex and Time 1 and Time 2 school context and shame management were needed. The full model, in which all possible direct and indirect effects between these Time 1-Time 2 constructs were included, provided a significantly better fit to the data than the proposed model, $\Delta\chi^2(1) = 4.79, p < .05$. The only actual difference between the proposed model and the full model was the addition of a direct link between Time 1 acknowledgement and Time 2 school connectedness. The resulting improvement in fit suggests that there were reciprocal longitudinal relationships between school context and shame acknowledgement. It appears that adaptive shame management skills in the primary school years did in fact facilitate adjustment to high school, just as better adjustment to primary school predicted adaptive shame management during the high school years.

On the basis of these findings, it was decided to reject the proposed model in favour of the ‘full’ model as the best representation of the data. The standardised path coefficients for this model are displayed in Figure 7.3. I turn now to an interpretation of the direct and indirect effects. Because of the small sample size and departure from normality, bootstrapped estimates of regression weights and standard errors were used¹⁷. One thousand bootstraps were requested. Despite the problems of sample size

¹⁷ Small sample size and departures from normality can result in biased parameter estimates. These factors pose particular problems for the calculation of standard errors and confidence intervals around estimates of indirect, or mediated, effects. Specifically, confidence intervals constructed based upon assumptions of normality tend to give asymmetric error rates, with intervals skewed towards the null hypothesis (MacKinnon & Dwyer, 1993). For assessing an effect using 95% confidence intervals, the null hypothesis of no indirect effect would be rejected at $\alpha = .05$ if the value of 0 lies outside the interval. If intervals are skewed, however, the test of the effect might lack statistical power to reject the null hypothesis. Researchers increasingly recommend the use of bootstrapping methods to deal with this problem. This involves taking repeated, smaller random samples from the existing data set and estimating effects in each resampled set. Over many bootstraps, empirical estimates of parameters and percentile estimates of associated confidence intervals are developed that do not impose the assumption of

and normality, the bias between the bootstrapped and maximum likelihood estimates and standard errors was less than .01 for all parameters. This indicates that the parameter estimates were not unduly biased due to small sample or non-normality. Following recent methodological recommendations for testing individual effects with small sample sizes¹⁸ (Preacher & Hayes, 2008; Shrout & Bolger, 2002) bias-corrected percentile estimates of 95% confidence intervals were used to assess direct and indirect effects. Direct and indirect effects of predictors in the model on Time 2 acknowledgement, Time 2 bullying, Time 3 drinking and Time 3 aggression, along with confidence intervals, are shown in Table 7.5.

Interpretation of direct and indirect effects

To provide a conceptual framework for the interpretation of these indirect effects, I organise the discussion around two interrelated pathways of risk for adult aggression that are apparent in Figure 7.3. The first of these is a *continuity of behaviour* pathway: bullying at Time 1 predicts bullying at Time 2, which manifests in physical aggression at Time 3. The second is the a *socio-emotional* pathway: risk for Time 3 aggression is contained within patterns of Time 1 – Time 2 poor school connectedness and maladaptive shame management, leading to frequent emerging adulthood drinking. The blue arrows represent the socio-emotional pathway, and the red arrows the behavioural pathway. The following discussion aims to, first, interpret how drinking at Time 3 can be seen as mediating the effects of earlier socio-emotional factors on aggression during emerging adulthood; and second, to describe how this socio-

normality. Simulation studies show that this procedure performs better than the Sobel test in terms of power and maintenance of a reasonable control over Type I error rate (MacKinnon, et al., 2004).

¹⁸ The percentile estimate of the 95% confidence interval is created by ordering the total number (eg. 1000) bootstrap estimates from lowest to highest; the 25th from the bottom is marked as the lower bound and the 975th as the upper bound. However, such percentile estimates have been shown to be too narrow, particularly with small sample sizes. Under these conditions researchers recommend the use of bias-corrected confidence intervals that use bounds that take into account asymmetry in the distribution of bootstrap estimates (Efron & Tibshirani, 1993; Shrout & Bolger, 2002).

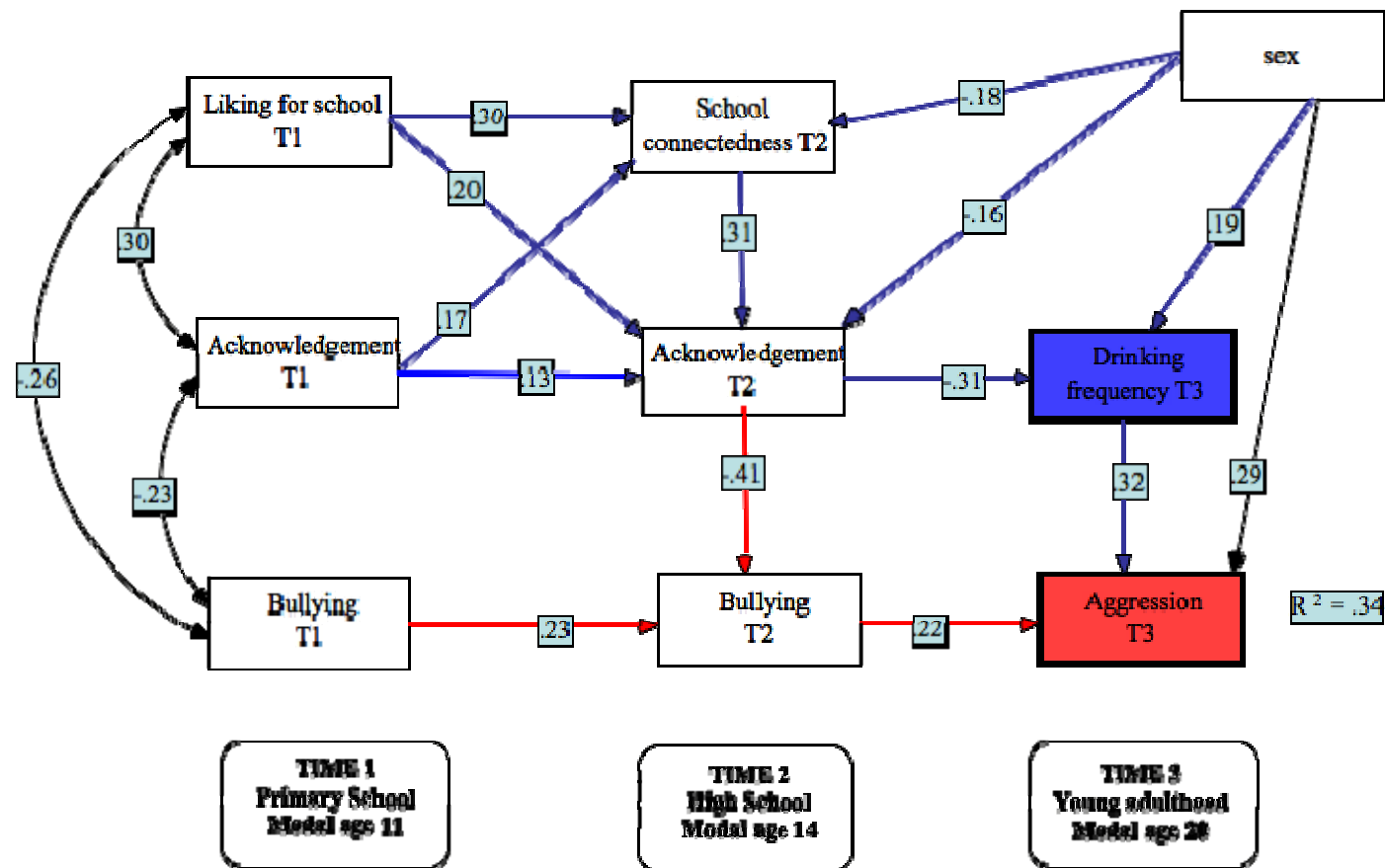


Figure 7.3: Final model: Pathways to aggression via drinking

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Table 7.5: Mediated model of pathways to aggression involving drinking: Standardised direct and indirect effects of predictors on Time 2 acknowledgement, drinking, and aggression, with bias-corrected bootstrap 95% confidence intervals

	→ Time 2 Acknowledgement						→ Time 2 Bullying					
	Direct			Indirect via Time 2 connectedness			Direct			Indirect via Time 2 connectedness and acknowledgement		
	Estimate	95% CI		Estimate	95% CI		Estimate	95% CI		Estimate	95% CI	
Sex ¹	-.16*	-.31	-.03	-.06**	-.13	-.01	-	-	-	.09**	.03	.18
<i>Time 1 measures</i>												
Liking for school	.20**	.05	.35	.09**	.04	.17	-	-	-	-.12**	-.21	-.05
Acknowledgement	.13	-.03	.30	.05*	.01	.12	-	-	-	-.08*	-.18	-.01
Bullying	-	-	-	-	-	-	.23**	.08	.39	-	-	-
<i>Time 2 measures</i>												
School connectedness	.31**	.16	.43	-	-	-	-	-	-	-.13**	-.21	-.07
Acknowledgement	-	-		-	-	-	-.41**	-.57	-.25	-	-	-
Bullying	-	-		-	-	-	-	-	-	-	-	-
Drinking, Time 3	-	-		-	-	-	-	-	-	-	-	-

(Table continues next page)

(Table 7.5 continued)

	→ Time 3 Drinking						→ Time 3 Aggression					
	Direct			Indirect via Time 2 connectedness and acknowledgement			Direct			Indirect via Time 2 connectedness, acknowledgement and bullying		
	Estimate	95% CI		Estimate	95% CI		Estimate	95% CI		Estimate	95% CI	
Sex ¹	.19*	.01	.32	.07**	.02	.14	.29**	.14	.43	.10**	.05	.19
<i>Time 1 measures</i>												
Liking for school	-	-	-	-.09**	-.19	-.03	-	-	-	-.06**	-.12	-.02
Acknowledgement	-	-	-	-.06*	-.13	-.01	-	-	-	-.04**	-.09	-.01
Bullying	-	-	-	-	-	-	-	-	-	.05**	.01	.12
<i>Time 2 measures</i>												
School connect	-	-	-	-.10**	-.17	-.04	-	-	-	-.06**	-.11	-.03
Acknowledgement	-.31**	-.46	-.14	-	-	-	-	-	-	-.19**	-.30	-.10
Bullying	-			-	-	-	.22**	.07	.38	-	-	-
Drinking, Time 3	-			-	-	-	.32**	.16	.46	-	-	-

*** $p < .001$. ** $p < .01$. * $p < .05$. ¹ male = 1

emotional pathway involving drinking relates to the behavioural pathway involving bullying.

From the results presented in Figure 7.3 and Table 7.5, it is apparent that Time 2 bullying, drinking and sex had direct effects on Time 3 aggression, as expected. Table 6.5 also shows that the modelled indirect effects were significantly different from zero.

Figure 7.3 shows that Time 2 shame acknowledgement is the central ‘mediated’ variable in the socio-emotional pathway to aggression via Time 3 drinking.

Acknowledgement occupied a central role as both a mediated predictor of aggression (via drinking) and as a mediator of the relationship between the other Time 1 and Time 2 socio-emotional variables and subsequent drinking and aggression. Time 2 acknowledgement was primarily influenced by Time 1 and Time 2 perceptions of the school context. Specifically, Time 1 liking for school predicted Time 2 school connectedness, and this in turn was positively related to Time 2 acknowledgement. Time 1 liking for school also had a direct positive effect on Time 2 acknowledgement. Interestingly, the direct effect of Time 1 acknowledgement on Time 2 acknowledgement was non-significant. Instead, Time 1 acknowledgement was indirectly linked to Time 2 acknowledgement by increasing the likelihood of school connectedness in high school. This suggests that continuity in shame acknowledgement may have been primarily maintained by the way in which adaptive acknowledgement facilitated continuity in school adjustment: first, continuing positive perceptions of the school environment increased the likelihood of adaptive shame management during the high school years, and second, positive perceptions of the high school environment were made more likely by adaptive shame management skills established three years earlier in primary school. This maintenance of adaptive socio-emotional functioning over the primary school- high school transition was protective in terms of physical

aggression six years in the future because it was associated with less frequent drinking in early adulthood.

The significance of Time 1 and Time 2 socio-emotional functioning for adult aggression is further highlighted when considering how this pathway relates to the behavioural pathway involving Time 1 and Time 2 bullying. Figure 7.3 shows that Time 2 shame acknowledgement was the key variable linking the two pathways. At Time 2, paths from acknowledgement ‘fork off’ in two directions. The ability to acknowledge shame in high school was associated with less concurrent bullying, and also with a lower likelihood of frequent drinking in early adulthood. About 50% of the total indirect effect of Time 2 acknowledgement on Time 3 aggression ($-.19$, panel three in Table 6.5) operated via Time 2 bullying ($-.41 \times .22 = -.09$) and about 50% via Time 3 drinking ($-.31 \times .32 = -.10$). Thus, the reciprocal relationships between positive perceptions of the school context and adaptive shame management over Time 1 and Time 2 were indirectly associated with less frequent Time 2 bullying, and eventually, less frequent Time 3 drinking and less frequent physical aggression. Overall, this series of links highlights the significance of adjustment over the primary school- high school transition for early adult outcomes.

Finally, processes within both the socio-emotional and behavioural pathways were in the direction of increased risk of Time 3 aggression for males. Sex influenced aggression directly, and indirectly via its relationship to variables in the socio-emotional pathway (Time 2 school connectedness, Time 2 acknowledgement, and Time 3 drinking). The greatest portion of the total indirect effect of sex on aggression ($.10$, panel four in Table 7.5) was accounted for by the direct link between male gender and more frequent Time 3 drinking ($.19 \times .32 = .059$; 59% of the total indirect sex effect). Of the remainder, 15% operated via Time 2 acknowledgement $\rightarrow$ Time 3 drinking ($-.16 \times -.31 \times .32 = .015$), and only 6% via Time 2 school connectedness $\rightarrow$ Time 2

acknowledgement → Time 3 drinking ($-.18 \times .31 \times -.31 \times .32 = .006$). Finally, 20% of the total indirect effect of sex on aggression was due to the way in which shame acknowledgement linked socio-emotional processes with bullying at Time 2, with most of this (14% of the total effect) due to the direct path between sex and Time 2 acknowledgement. Overall, these results confirm that, regardless of developmental history of socio-emotional functioning or bullying, young men were more likely to drink frequently and behave aggressively than young women during emerging adulthood. However, male participants also reported lower levels of school connectedness and shame acknowledgement during high school, and these factors subsequently predicted bullying, drinking and aggression.

Stage 4: Are the pathways to Time 3 aggression the same or different for the four bully trajectory groups?

Considering the sample as a whole, the path analysis suggested that drinking frequency mediated the effect of earlier socio-emotional variables on the physical aggression outcome. However, the moderation analyses reported in Chapter 5 indicated that the regression coefficient for the final link in this socio-emotional pathway of risk, between drinking and aggression, differed according to bully trajectory group. It is possible, then, that the mediated model in Figure 7.3 might also vary according to bully trajectory group. For simplicity, this section will refer to the key predictors of drinking as risk factors.

If the same pattern of risk factors applies equally to each bully group, I would expect the same variables to be associated with drinking for each bully trajectory group. In other words, young people who were members of each different bully group (non-bullies, child limited bullies, adolescent-onset bullies, and persistent bullies) should share the same child and adolescent risk factors for emerging adult drinking. One

approach to testing this would be to compare mean levels of risk variables using analysis of variance, with bully group (non-bully, child bully, adolescent bully and persistent bully) and Time 3 drinking (high vs. low) as factors. A significant bully group-by-drinking frequency interaction would indicate that the risk factors associated with frequent drinking differed within bully groups. If the patterns displayed in Figure 7.3 do in fact apply equally across bully groups, I would predict a *lack* of drinking-group within bully-group differences and seek to confirm the null hypothesis via a nonsignificant interaction term. However, statistical power poses a problem for significance testing. Because of the small cell sizes (for example, there were only six adolescent bullies who were frequent drinkers) the null hypotheses could be ‘confirmed’ falsely as a result of low statistical power. As discussed, the cell sizes also precluded the construction of separate path models for each bully group. Therefore, I did not attempt these tests. Instead, I adapted a method used by Moffitt and Caspi (2001), and simply present descriptive statistics for visual inspection of risk factor effect sizes within each separate bully group.

The upper parts of the plots in Figures 7.4 (A) to (D) show mean scores on continuous risk factors for high and low frequency drinking within, respectively, non-bully (A), child-limited bully (B), adolescent-onset bully (C), and persistent bully (D) group. Red bars represent scores for high frequency drinkers in each group, and blue bars represent scores for low frequency drinkers in each group. The cut-off for high drinking was set at the 90th percentile. In concrete terms, this corresponds to drinking ‘3 - 4 days a week or more often.’ The plots show means as *z* scores standardised on the full sample with a mean of 0 and a standard deviation of 1. This sample-mean may be interpreted as a normative standard for the sample under investigation. Thus, the size of the difference between any subgroup’s mean *z* score on risk factor *x* and the sample mean indicates how far, in standard deviation units, that subgroup deviates from the

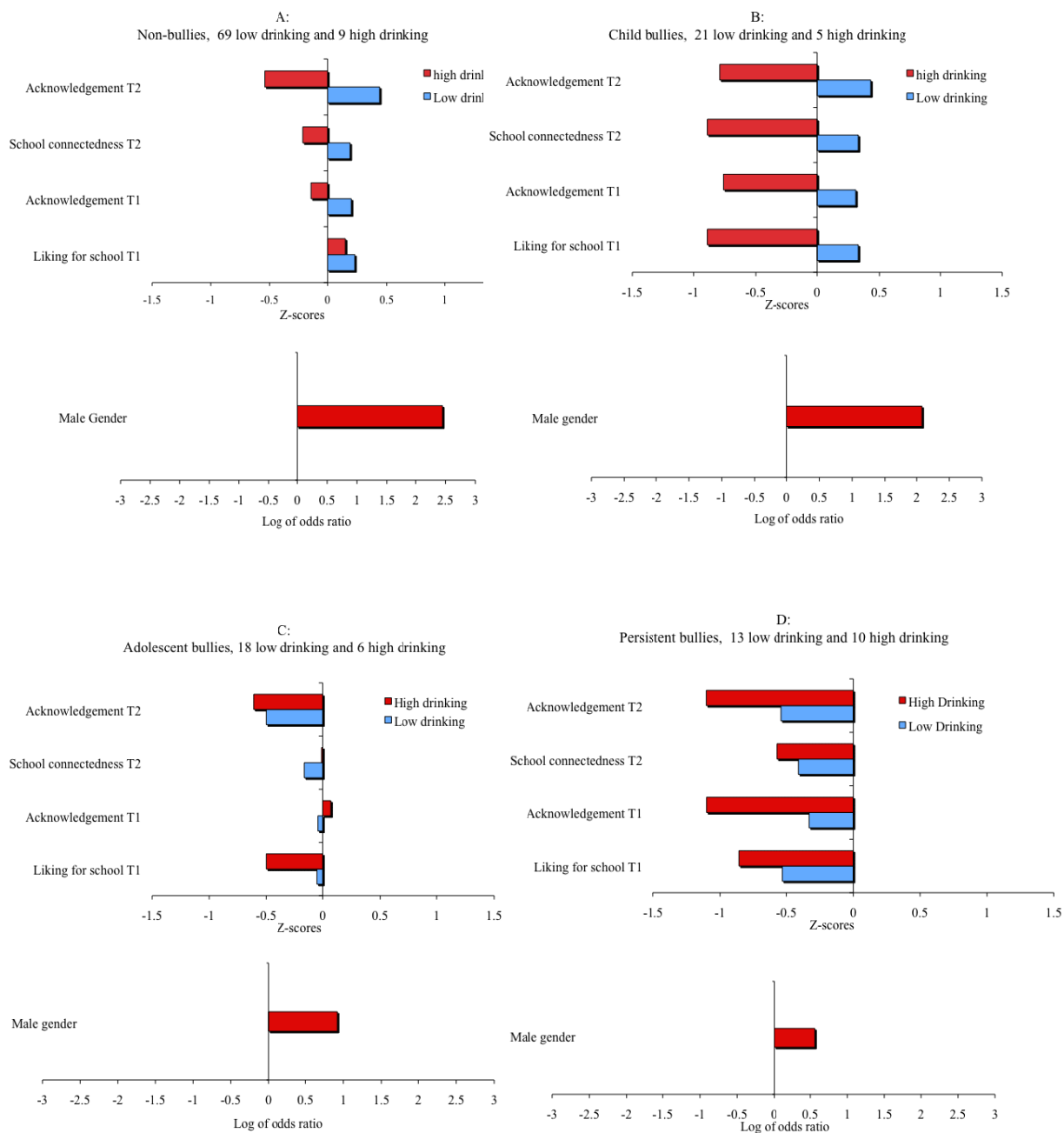


Figure 7.4: Mean scores and log odds-ratios for predictors of Time 3 drinking frequency within each bully trajectory group

overall normative standard with regard to that risk factor. For example, the mean z score on Time 1 acknowledgement for the high drinkers within the child-limited bully group shows how far, on average, members of this subgroup score below the sample norm for Time 1 acknowledgement. This standard deviation distance between the group's mean and the normative zero may further be interpreted as the effect size, where $.2 SD$ is a small effect, $.5 SD$ is a medium effect, and $.8 SD$ is a large effect (Cohen, 1988). These statistics are presented in the upper section of Table 7.6.

The lower parts of Figures 7.4 (A) to (D) present the log odds ratio for sex (male = 1) of drinking at the 90th percentile, calculated separately within each bully group. These scores may be interpreted as the degree of association between male gender and drinking at the 90th percentile for participants within each different bully group¹⁹. Statistics for odds- and log odds ratios may be found in the lower section of Table 7.6.

If the pathways to drinking are the same across the four groups, the following three patterns should be observed in Figures 7.4 (A) to (D):

(1) Regardless of bully trajectory group, high frequency drinkers should deviate from the norm on socio-emotional risk factors relative to their low drinking counterparts. For example, high frequency drinkers in the non-bullying group should be further below the norm on Time 2 acknowledgement than low frequency drinkers in the non-bully group; and high frequency drinkers in the persistent bullying group should be further below the norm than persistent bullies who drank less frequently at Time 3.

(2) Regardless of drinking frequency, there should be overall differences between means presented in the upper plots for the three bully groups (child-limited, adolescent-onset, and persistent) compared to the non-bully group. The pattern of means should conform to results of planned contrasts reported in Chapter 5 (Table 5.2) which showed that persistent bullies reported significantly lower scores on Time 1

¹⁹ Log odds, unlike ordinary odds ratios, have a symmetric distribution around zero. This makes them useful for visual interpretation.

Table 7.6: Risk factors for frequent Time 3 drinking: Mean *z*-scores for high and low frequency Time 3 drinkers in the non-bully, child-limited, adolescent-onset, and persistent bully groups, and odds ratio of male gender for frequent Time 3 drinking

	<i>z</i> -score (<i>M</i> ± <i>SD</i>)							
	Non-bullies (n=78)		Child-limited (n=26)		Adolescent (n=24)		Persistent (n=23)	
	Lower frequency drinking (n=69)	High frequency drinking (n = 9)	Lower frequency drinking (n = 21)	High frequency drinking (n= 5)	Lower frequency drinking (n= 18)	High frequency drinking (n=6)	Lower frequency drinking (n=13)	High frequency drinking (n=10)
<i>Continuous risk factors</i>								
Acknowledgement Time 2	.44 ± 1.2	.15 ± 1.1	.43 ± 0.5	-.79 ± 1.6	-.5 ± 1.2	-.61 ± 1.1	-.54 ± 1.2	-1.1 ± 1.1
School connectedness Time 2	.19 ± 1.0	-.14 ± 1.3	.33 ± 0.8	-.89 ± 1.4	-.16 ± 1.1	-.01 ± 1.1	-.41 ± 1.0	-.57 ± 1.0
Acknowledgement Time 1	.20 ± 1.3	-.21 ± 1.0	.31 ± 0.6	-.76 ± 1.2	-.04 ± 1.2	.07 ± 0.6	-.33 ± 1.3	-1.1 ± 1.3
Liking for school Time 1	.23 ± 1.2	-.54 ± 1.1	.33 ± 0.7	-.89 ± 0.8	-.05 ± 1.1	-.50 ± 1.2	-.53 ± 1.2	-.86 ± 1.2
Odds ratios (Log of odds ratios)								
	Non-bullies (23 males)		Child-limited (11 males)		Adolescent (12 males)		Persistent (17 males)	
Sex	11.59 (2.45)		8.0 (2.08)		2.5 (.092)		1.78 (.56)	

acknowledgement and liking for school, and Time 2 acknowledgement and school connectedness, than non-bullies. Thus, both high and low drinkers in the persistent bully group should score further below the norm on these risk factors than high and low drinkers in the non-bullying group. Adolescent-onset bullies, however, only differed from non-bullies at the group level on Time 2 acknowledgement. Both high and low drinkers in the adolescent-onset group should therefore score well below the norm on Time 2 acknowledgement, but score nearer the non-bully group on other risk factors. As contrasts were not conducted for the child-limited bully group, no specific predictions are made regarding patterns for this group.

(3) The log odds ratio for sex should indicate an increased likelihood of a drinking at the 90th percentile for male participants, regardless of bully trajectory group.

Visual inspection of Figures 7.4 (A) to (D) reveals that data are generally consistent with expectations.

1: High frequency Time 3 drinkers should score worse on Time 1 and Time 2 risk factors than low-frequency drinkers, regardless of bully trajectory group

Consistent with the first pattern, Figures A to D show that, in most bully trajectory groups, frequent drinkers scored worse than less frequent drinkers. Frequent drinkers in the non-bully (Figure A) and child-limited bully (Figure B) groups generally scored below the mean on all four risk factors, indicating elevated levels of risk for drinking, while less frequent drinkers scored near or above the mean, indicating lower levels of risk. Scores in the persistent bully group (Figure D) were worse for both frequencies of drinking, but were consistently further from the normative mean for the high drinkers. The distinctions between drinking frequencies in the non-bully, child-limited, and persistent bully groups were most consistently pronounced for Time 2 shame acknowledgement, which is consistent with the strong relationship between

maladaptive acknowledgement and more frequent adult drinking. The one group that did not conform to the first expected pattern was the adolescent bullies. Within this group, high and low frequency drinkers were more similar to each other than different. With the exception of Time 1 liking for school, the risk variables did not distinguish low drinkers from high drinkers. Furthermore, mean levels of risk for Time 1 acknowledgement and Time 2 school connectedness amongst the adolescent-onset bullies were near the sample norm for both high and low drinkers.

2: Members of the three bully groups should score worse on Time 1/Time 2 risk factors compared to the non-bully group, regardless of Time 3 drinking frequency

Consistent with the second aforementioned pattern, comparison of Figures A and D confirms that both high and low frequency drinkers in the persistent bully group scored worse on all four risk factors than their counterparts in the non-bullying group. Scores for persistent bullies were worse than the norm regardless of drinking frequency, while for non-bullies, any deviations in the direction of elevated risk were apparent only for the frequent drinkers. Comparison of Figures C and A show that both frequent and less frequent drinkers in the adolescent-onset bully group deviated from the norm on Time 2 acknowledgement, while in the non-bully group only frequent drinkers scored below the mean. However, scores for the other three risk factors in both non-bully and adolescent groups were mostly at or near the normative means for the sample, regardless of drinking frequency. The one exception was the lower Time 1 liking for school mean for frequent drinkers in the adolescent-onset group. The overall pattern, however, is consistent with the contrasts between the adolescent-onset and non-bully groups presented in Chapter 5, which showed that adolescent-onset bullies scored significantly lower on Time 2 acknowledgement than non-bullies, but that the group means did not differ significantly on the other risk factors for drinking.

Figure B presents an interesting pattern for the child-limited bullies in comparison to the non-bullies. Although contrasts between these groups were not performed in Chapter 5, on the basis of the developmental aggression and delinquency literature, it is reasonable to expect that child-limited bullies should display poorer adjustment than non-bullies on Time 1 measures, but not Time 2 measures. Instead, comparison of Figures A and B show that the patterns of mean risk factor scores were similar in both groups. Child-limited bullies who became low frequency adult drinkers scored above the sample mean on all risk factors, indicating lesser risk for drinking, and child-limited bullies who became high frequency adult drinkers scored below the sample mean on all risk factors, indicating greater risk for drinking. The same mirror-image pattern is also apparent in the non-bullying group (Figure A), though to a less pronounced degree. The main difference between the two groups was that *frequent* adult drinkers in the child-limited bully group had generally worse levels of risk for drinking than the frequent drinkers in the non-bully group, whereas the effect sizes for *infrequent* drinkers across both non-bully and child-limited subgroups essentially did not differ. This suggests that any Time 1 and Time 2 differences between the child-limited and non-bully groups applied only to the frequent adult drinkers. In other words, there was a stronger association between difficulties with socio-emotional functioning during the school years and adult drinking for child-limited bullies, than for non-bullies.

3: Male gender should be associated with more frequent Time 3 drinking, regardless of bully trajectory group

Consistent with the third expected pattern, the odds ratios for male gender did indicate an increased likelihood of Time 3 frequent drinking for young men within each bully trajectory group. The value was greatest for the non-bully group, amongst whom male gender was associated with an almost 12-fold increase in the odds of drinking at

the 90th percentile (see Table 6.6). The odds become progressively lower in Figures B, C and D. For example, male child-limited bullies were eight times as likely to drink frequently as females, but male persistent bullies were only 1.8 times as likely to drink frequently. This decline probably occurred because the proportion of males to females increased progressively from the non-bullying group to the persistent bullying group. The positive odds ratios reflect the fact that the majority of frequent drinkers in each trajectory group were men, but the strength of the association between frequent drinking and gender decreased as the ratio of males to females increased. Nonetheless, the overall pattern is consistent.

To summarise, frequent drinking during emerging adulthood was associated with elevated risk in terms of poor socio-emotional functioning during the school years within each bully trajectory group. Only in the persistent bullying group, however, did scores consistently deviate below the mean for low drinkers as well. In the other groups, deviations from the norm were mostly only observed for the frequent drinking subgroups. The pattern of results thus seems generally consistent with the pathways described in Figure 7.3, at least for the non-bully, child-limited bully, and persistent bully groups. In these groups, less frequent drinking during emerging adulthood did seem to be reliably associated with positive perceptions of the school environment and an ability to acknowledge shame in high school and primary school within non-bully, child-limited and persistent trajectory groups. The one group that did not really fit this pattern was the adolescent-onset bullies, raising the possibility that pathways to early adult drinking may be somewhat different for these individuals. However, the overall pattern seems consistent enough to assume that the pathways to drinking described by the model in Figure 7.3 represent developmental processes that apply to the majority of the study participants.

Chapter summary

Chapter 6 focused on the effects of emerging adult transition experiences on the course of aggressive behaviour from childhood. The findings showed that post-high school drinking frequency and institutional role status moderated the relationship between bullying trajectories in childhood and adolescence and emerging adult physical aggression. This chapter, and the next, were designed to address the second major research question: What are the underlying mechanisms in the developmental course of aggressive behaviour from childhood to early adulthood? The current chapter addressed this question with regard to pathways to aggression that involved drinking. The overall aim was to establish whether aspects of socio-emotional functioning from Times 1 and 2 that did not directly predict Time 3 aggression might instead indirectly relate to this outcome via links to Time 3 drinking.

Analyses in stage 1 identified which Time 1 and Time 2 variables were direct predictors of Time 3 drinking frequency. With the exception of male gender, the only direct predictor was low Time 2 shame acknowledgement. The second analysis stage therefore involved taking a step back in time to identify Time 1 variables that might indirectly predict drinking via Time 2 acknowledgement. Results revealed that adaptive acknowledgement at Time 2 was predicted by female gender, Time 1 liking for school, and Time 1 adaptive shame management (high acknowledgement and low displacement). Furthermore, there was evidence that some of these effects were mediated via Time 2 school connectedness. Stage 3 integrated findings from the first two stages with those from Chapters 5 and 6 to construct and test a mediated model of pathways to aggression involving drinking. The aim was to examine how several interrelated Time 1 and Time 2 variables indirectly predicted Time 3 aggression via Time 3 drinking. The final model highlighted the long-term consequences of emotion regulation in the school context during childhood and adolescence for early adult

drinking and aggressive behaviour. Specifically, the model implied that continuity in positive perceptions of the school environment across the primary school- high school transition facilitated adaptive Time 2 shame acknowledgement, and this process indirectly decreased the risk of Time 3 physical aggression by reducing the likelihood of frequent drinking in the post-high school years. Finally, stage 4 considered whether the mediated relationships implied by the model were different or similar across the four bully trajectory groups. Although there were some inconsistencies for the adolescent-onset bully group in particular, the overall pattern of results supported the conclusion that the pathways to drinking described by the model were relatively consistent across the four groups.

The following chapter assesses pathways to aggression that involve institutional role status. I reserve a fuller discussion of the implications of these findings for the moderation analyses presented earlier for the final chapter.

CHAPTER 8:

MECHANISMS IN THE DEVELOPMENTAL COURSE OF AGGRESSIVE BEHAVIOUR FROM CHILDHOOD TO EMERGING ADULTHOOD: INSTITUTIONAL ROLE

The previous chapter focused on processes linking childhood and adolescent bullying to emerging adult aggression via drinking. This chapter focuses on processes involving institutional role status. Are bullies less likely to go to university? Which aspects of socio-emotional functioning measured during the school years predicts who goes to university and who does not? Are these earlier factors also related to Time 1 and Time 2 bullying? Finally, how consistent are such relationships within different bully trajectory groups?

I aim, first, to establish which Time 1 and Time 2 factors, either directly or in combination, predict a university-oriented vs. employment-oriented institutional role at Time 3. As in Chapter 7, an important step is to examine whether childhood factors have lasting consequences for post-high school outcome, or whether they relate to Time 3 role status mostly via high school experiences. These relationships are then combined with findings from Chapter 6 to construct and test a model linking longitudinal connections to institutional role status with continuity in aggression. Finally, I consider whether the relationships implied by the model apply equally across the four bully trajectory groups.

Analyses proceed in the four stages described at the start of Chapter 6. Stage 1 examines direct links between variables measured at Time 1 and Time 2 and institutional role at Time 3. Because of the dichotomous nature of the dependent variable, logistic regression is utilised. In the first step I construct separate models to examine Time 1 and Time 2 predictors in isolation, and in the second step construct a model that includes significant predictors from both time periods. This examines direct

links from variables measured in primary school and high school to emerging adult institutional role.

Stage 2 takes a step back to assess earlier links in the chain of events between primary school (Time 1) and high school (Time 2). Here, Time 2 predictors of Time 3 institutional role status are treated as dependent variables in analyses with predictors measured at Time 1.

In stage 3, I construct a mediated path model by combining the findings from stages 1 and 2 with those from Chapter 6 relating to bullying and aggression. The aim is to once again construct a parsimonious yet informative model, and to this end decisions about model building are informed by the earlier analyses, theoretical concepts, and prior research.

Finally, stage 4 utilises the same descriptive methods outlined in the previous chapter to examine patterns of role status predictors within each bully trajectory group. The aim is to assess whether the same child and adolescent factors that distinguish between participants who were in employment-oriented vs. university-oriented roles as emerging adults at the sample level also appear to distinguish between these two roles at the bully trajectory group level.

Stage 1: Child and adolescent predictors of emerging adult

institutional role status

This first set of analyses uses hierarchical logistic regression to identify which of the Time 1 and Time 2 variables had the capacity to distinguish participants who were in a university-oriented role in early adulthood from those who were in an employment-oriented role. Following the strategy employed in the previous chapter to examine pathways to drinking, Time 1 and Time 2 predictors of institutional role status were first

examined in separate models, followed by a final regression based on the four-group categorical measure of bullying and all other factors that survived in the initial analyses.

In the initial analyses, variables were entered in four sequential blocks in the same order as was done for drinking in Chapter 7. The first model included only the demographic measures (sex and parental education). School adjustment variables (and impulsivity in the analysis with Time 1 predictors) were added to the model in the second block, shame management variables in the third block, and bullying in the final block. Following each addition, goodness-of-fit statistics were examined to determine whether the model log-likelihood increased significantly with the addition of new predictors. A significant increase indicates that the model with more predictors is a better fit to the data (is able to more accurately classify values on the dependent variable) than the model with fewer predictors. Table 8.1 summarises information from the final block for each analysis, when all predictors were in the model²⁰. The left-hand panel shows regression coefficients, standard errors of coefficients, odds ratios, and 95% confidence intervals for odds ratios, for the final step of the model containing Time 1 predictors. The right-hand panel presents the same information for the model containing Time 2 predictors. In all analyses, university-oriented role was coded 1, and employment-oriented role was coded 0.

I focus first on the analysis that included only Time 1 variables as predictors of different Time 3 roles. The test of the first model containing only demographic measures against the constant-only model was statistically significant, $\chi^2(2) = 18.14, p < .001$, indicating that sex and parental education taken together reliably distinguished between employment-role and university-role participants. In fact, there was an adequate model fit on the basis of these two demographic predictors alone, as indicated by a non-significant Hosmer and Lemeshow test statistic, $\chi^2(2) = 1.46, p = .15$. Male

²⁰ Detailed tables showing results from each step of the logistic regression analyses may be found in Appendix C, Table C8.1A (Time 1 predictors) and Table C8.1B (Time 2 predictors).

Table 8.1: Summary of logistic regression models predicting adult (Time 3) institutional role status[†] from child (Time 1) and adolescent (Time 2) school adjustment, shame management and bullying

	Time 1 - Time 3, final model					Time 2- Time 3, final model			
	B	SE	Odds ratio	95% CI		B	SE	Odds ratio	95% CI
Sex ¹	-.81*	.40	.45	.20 – .97	Sex ¹	-.87*	.40	.42	.19 – .92
Parental education ²	1.13**	.38	3.10	1.48 – 6.48	Parental education ²	1.11**	.37	3.02	1.46 – 6.24
<i>Time 1 predictors</i>					<i>Time 2 predictors</i>				
Impulsivity	-.74**	.28	.48	.28 – .82					
Academic difficulties	-.67	.53	.51	.18 – 1.42	Academic difficulties	-1.06*	.47	.35	.14 – .86
Liking for school					School connectedness	-.23	.32	.79	.42 – 1.49
Displacement	-.99	.95	.37	.06 – 2.42	Acknowledgement	-.005	.91	3.65	.62 - 21.64
Acknowledgement	.97	.95	2.64	.41 – 6.81	Displacement	1.29	1.18	1.00	.10 – 10.23
Bullying	-.16	.35	.85	.43 – 1.69	Bullying	.23	.34	.50	.65 – 2.45
Nagelkerke R^2 = .25					Nagelkerke R^2 = .21				

*** $p < .001$. ** $p < .01$. * $p < .05$

[†]reference group = employment-oriented. ¹ male = 1. ² university = 1

gender decreased the chances of a participant being in a university role at Time 3, while having a parental with a university education greatly increased the chances of being in this role. Addition of impulsivity and the school adjustment variables (liking for school and academic difficulties) at the second step significantly improved model fit after accounting for sex and parental education, $\chi^2(3) = 11.64, p < .001$. Of these three measures, however, only impulsivity was a significant predictor of Time 3 institutional role status, $B = -.72, Wald(1) = 7.31, p < .01$. Increases in Time 1 impulsivity were associated with a greater likelihood of an employment-oriented role in early adulthood. None of the variables added on subsequent steps produced significant improvements in model fit above sex, parental education, and impulsivity. This shows that Time 1 measures of shame management ($\chi^2(2) = 1.5, p = .46$) and T1 bullying ($\chi^2(1) = .22, p = .64$) did not significantly improve accuracy of classification over and above contributions of other predictors. The left-hand panel of Table 8.1 presents tests of individual predictors from the final step. With all other Time 1 predictors controlled, male gender decreased the odds of Time 3 university role by 55% (odds ratio = .45), parental university attendance increased the odds of Time 3 university role by almost 70% (odds ratio = 3.1), and a one standard deviation unit increase in impulsivity was associated with a 52% decrease in the odds of a participant being in a university role at Time 3 (odds ratio = .48) (Tabachnick & Fidell, 2007).

The second analysis examined whether any of the Time 2 predictors could distinguish university-role participants from employment-role participants, after controlling for demographic variables. The first model included only sex and parent education and was therefore identical to that reported above. The test of the next model at step 2, in which Time 2 school adjustment variables (school connectedness and academic difficulties) were added to the demographic variables, was significant, $\chi^2(2) = 6.14, p < .05$, indicating that these variables improved the accuracy of institutional role

status prediction above sex and parental education. Of the two predictors, however, only perceived academic difficulties was significantly associated with Time 3 institutional role, $B = -1.07$, $Wald(1) = 5.66$, $p < .05$. Greater perceived difficulties was associated with a decreased likelihood of university attendance, and school connectedness was unrelated to Time 3 role status. The pattern of results for the final two steps mirrored the previous analysis with Time 1 predictors. Neither the addition of Time 2 shame management variables (step 3), nor bullying (step 4), significantly improved model fit above the effects of sex, parental education, and academic difficulties (Step 3: $\chi^2(2) = 1.68$, $p = .43$; step 4: $\chi^2(1) = .47$, $p = .49$). Tests of individual predictors from the final step are presented in the right hand panel of Table 8.1. With demographic and all other Time 2 predictors controlled, a one-unit increase in Time 2 academic difficulties was associated with a 65% decrease in the odds of a participant being in a university role at Time 3 (odds ratio = .35).

These Time 1-limited and Time 2-limited analyses show that, after controlling for sex and parental education, the only Time 1 measure that differentiated between university-oriented participants and employment-oriented participants was impulsivity, and the only Time 2 variable to do so was academic difficulties. Neither poor shame management nor bullying was associated with a greater or lesser likelihood of participants being in one role over the other at Time 3. However, these separate analyses do not answer the question of whether childhood impulsivity and adolescent academic difficulties will make significant unique contributions to predicting Time 3 role status when both variables are in the model. Furthermore, they do not assess whether participants with different developmental histories of bullying would be under- or over-represented in different emerging adult institutional roles.

To address these issues, a single logistic regression analysis was conducted incorporating sex, parental education, the categorical measure of the four bully

Table 8.2: Final logistic regression predicting adult (Time 3) institutional role[†] from subset of child (Time 1) and adolescent (Time 2) measures

	Model 1				Model 2				Model 3			
	B	SE	Odds ratio	95% CI	B	SE	Odds ratio	95% CI	B	SE	Odds ratio	95% CI
Sex	-.88*	.35	.41	.21 - .83	-.77*	.38	.47	.22 - .97	-.87*	.40	.42	.19 - .92
Parental education	1.18***	.35	3.25	1.62 – 6.50	1.03**	.37	2.80	1.30 – 5.8	1.21**	.39	3.34	1.55 – 7.23
Impulsivity (Time 1)					-.73**	.26	.38	.28 - .81				
Academic difficulties (Time 2)					-.96*	.46	.48	.16 - .94	.61	.55	1.84	.63 – 5.36
<i>Bully trajectory group Time 1-Time 2³</i>									1.12*	.57	3.24	1.05 – 10.0
Child-limited									.08	.63	1.10	.32 – 3.73
Adolescent-onset									-.87**	.29	.42	.24 - .74
Persistent									-1.10*	.49	.34	.13 - .89
Nagelkerke R^2	.15				.26				.29			

*** $p < .001$. ** $p < .01$. * $p < .05$.

[†]reference group = employment-oriented. ¹ male = 1. ² university = 1. ³reference group = non-bullies

trajectory groups, Time 1 impulsivity and Time 2 academic difficulties as predictors of post-high school role status. Sex and parental education were entered in a block at the first step, Time 1 impulsivity and Time 2 academic difficulties at the second step, and the three dummy variables representing bully group at the final step.

Results of this analysis are summarised in Table 8.2. The far left hand panel presents statistics for individual predictors at step 1, the middle panel presents statistics for step 2, and the far right hand panel presents statistics for step 3, with all predictors in the model. Consistent with the initial analyses, the addition of Time 1 impulsivity and Time 2 academic difficulties at step 2 significantly improved the prediction of Time 3 role status, $\chi^2(2) = 14.24, p < .001$. However, the addition of the bully group dummies at the final step provided no significant increase in overall prediction of Time 3 role status after controlling for sex, parental education, impulsivity and academic difficulties, $\chi^2(3) = 5.15, p = .16$. The coefficients in panel 3 of Table 8.2 show that both impulsivity and academic difficulties made significant unique contributions to predicting the outcome after all other variables were controlled.

Unexpectedly, the coefficient for the adolescent-onset bully group dummy also just reached significance in the final model, indicating that adolescent bullies were *more* likely to attend university than non-bullies. Because the bully trajectory group variable was unrelated to role status at the bivariate level, it was suspected that this was a suppressor effect in relation to the other, more influential variables in the final model. To test this, the analysis was re-done with the three bully trajectory group dummies entered on the first step, and the other four predictors entered individually on subsequent steps in order to identify the suppressor. Parental education was entered at step 2, followed by sex at step 3, Time 1 impulsivity at step 4, and Time 2 academic difficulties on the final step. Coefficients for the bully group dummies were non-significant in steps 1, 2 and 3. Although the coefficient for the adolescent-onset group

approached significance at step 4 when impulsivity entered the model, it was only at the final step in the presence of academic difficulties that the adolescent-onset group reached significance. I also checked to see if the bully trajectory group variable interacted with either impulsivity or academic difficulties in the prediction of Time 3 institutional role status, but no interaction effects were found.

The predictors in the final model described in Table 8.2 were able to jointly correctly classify 67% of participants in an employment role and 70% of those in a university role, for an overall success rate of 68%. With all other variables controlled, the largest impact in terms of prediction was for parental education. Participants whose reporting parent had attended university were more than three times as likely to be in a university role compared to participants whose reporting parent had not attended university (odds ratio= 3.34). The next most influential factor was Time 2 academic difficulties. A one-unit increase in perceived difficulties during high school decreased the odds of university role by 66%, or was associated with an almost 3-fold increase in the odds of being in an employment role at Time 3 (odds ratio = .34). Male gender and Time 1 impulsivity both decreased the odds of university attendance by 58% (odds ratio for both variables = .42).

These analyses show that, apart from the sex and parental education, the only aspects of socio-emotional functioning in childhood and adolescence that directly predicted institutional role in emerging adulthood were impulsivity in childhood and academic difficulties in adolescence. In contrast to the link between Time 2 shame acknowledgement and Time 3 drinking reported in Chapter 7, none of the factors, controlling for sex, that distinguished between university and employment roles had been directly related to Time 3 aggression in Chapter 6.

Nonetheless, these findings identify Time 2 academic difficulties as a potential adolescent mediator in the pathway from childhood bullying to adult aggression, via

Time 3 institutional role. It remains to examine the earliest link in this chain. What primary school experiences might be associated with an increased likelihood of reporting trouble with school work in high school? The developmental literature confirms that *both* low socio-economic status and early behavioural undercontrol can hamper academic performance during high school. Might impulsivity at Time 1 predict increased academic difficulties in high school as well as eventual Time 3 role? Might higher parental education be associated with a greater capacity to cope with high school academic demands? These questions are addressed in the following section.

Stage 2: Childhood predictors of adolescent academic difficulties

A single hierarchical regression analysis was used to examine whether demographic and Time 1 factors were associated with high school academic difficulties. Variables were entered in four steps. Sex and parent's education were entered first, followed by Time 1 impulsivity, liking for school and academic difficulties at the second step, Time 1 shame management variables at the third step, and Time 1 bullying at the fourth step. Time 2 school connectedness and shame management variables were not included in the model.

The results of this analysis are presented in Table 8.3. Sex, bullying and shame management at Time 1 were not significantly associated with academic difficulties at Time 2. Instead, greater Time 2 difficulties were associated with greater Time 1 difficulties, lower liking for school, and having a parent who had not attended university. Unsurprisingly, the strongest predictor of Time 2 academic difficulties was Time 1 difficulties, and this effect dominated other variables in the model. Although Time 1 measures of bullying, shame displacement and impulsivity were all positively correlated with the dependent variable at the bivariate level (see the far right hand column in Table 8.3), these factors did not account for significant variance in Time 2

Table 8.3: Regression predicting Time 2 academic difficulties from child (Time 1) measures

	Step 1			Step 2			Step 3			Step 4			<i>r</i>
	<i>β</i>	95% CI for B		<i>β</i>	95% CI for B		<i>β</i>	95% CI for B		<i>β</i>	95% CI for B		
Sex ¹	.01	-.14	.14	.07	-.17	.08	-.07	-.19	.07	-.07	-.19	.07	.01
Parent education ²	-.15	-.27	.01	-.14*	-.25	.00	-.14*	-.25	.00	-.15*	-.25	-.00	-.15
Impulsivity				.06	-.05	.12	.04	-.07	.11	.02	-.07	.10	.17*
Academic difficulties				.40***	.29	.64	.38***	.27	.62	.38***	.27	.62	.45***
Liking for school				.19*	-.17	-.02	.19*	-.17	-.02	.18*	-.17	-.01	-.25**
Acknowledgement							-.01	-.05	.52	.01	-.12	.49	-.05
Displacement							.12	-.32	.29	.10	-.30	.33	.22*
Bullying										.08	-.06	.16	.20*
Δ <i>R</i> ²	.02			.24***			.01			.004			
Full model <i>R</i> ² = .28***													

*** $p < .001$. ** $p < .01$. * $p < .05$. ¹ male = 1. ² university = 1

academic difficulties beyond that also accounted for by the Time 1 measure of academic difficulties. In contrast, both Time 1 liking for school and parental education made modest unique contributions to the prediction of Time 2 difficulties beyond the contribution of Time 1 difficulties, although the effect for parental education was only marginally significant. Overall, the analysis demonstrates substantial stability in children's reports of struggling to meet scholastic demands across the primary school-high school transition. The analyses suggest that greater parental education, as well as a positive connection to the primary school setting, may underlie this stability by the ways in which they facilitated adjustment to the academic demands of high school. Interestingly, impulsivity did not account for unique variance in adolescent academic difficulties with other predictors controlled.

Stage 3: Interconnecting path model

In stage 1 I used logistic regression to identify which variables measured at Time 1 and Time 2 had the capacity to distinguish participants who were in a university role at Time 3 from those who were in an employment role. These analyses showed that participants who were in a university role were more likely to be female and to have a parent who had also attended university. Time 3 university attendance was also predicted by less reported impulsivity at Time 1, and less reported academic difficulties at Time 2. The stage 2 analyses investigated whether Time 2 academic difficulties could be predicted by parental education, sex, bullying or aspects of socio-emotional functioning at Time 1. The strongest predictor of Time 2 academic difficulties was Time 1 academic difficulties, but even after controlling for this measure, children who liked school less at Time 1 and whose reporting parent had not attended university were more likely to report academic difficulties in high school.

These predictors of Time 3 institutional role status represent various aspects of related constructs that may be broadly described as *social/human capital*, and *personal capital* (Caspi, Wright, Moffitt, & Silva, 1998). *Social capital* refers to the resources available to people that structure occupational and educational choices. The resources most often implicated are structural and demographic factors, such as family socio-economic status. However, other related aspects of social capital include resources that may be acquired with age, such as academic qualifications. Social capital measures that predict role status in the current study include parental education, Time 1 liking for school, Time 2 academic difficulties, and sex. Gender may be considered an aspect of social capital, as it is a social construct that structures occupational choices and socio-economic outcomes throughout the life span. *Personal capital* refers to behavioural characteristics and resources that either limit or facilitate individuals' capacities and motivation to undertake various occupational and educational roles. Examples include poor interpersonal functioning, antisocial tendencies, and poor mental health. In the current study, childhood impulsivity may be regarded as a measure of personal capital that limits occupational opportunities in early adulthood.

Following the procedures in the previous chapter, this section uses path modelling with measured variables²¹ to integrate the 'capital' predictors of role status with findings from Chapter 5 regarding the predictors of bullying and aggression. The

²¹ Institutional role status is a binary variable in which 0 = employment role and 1 = university role. It is treated as an endogenous, or dependent, variable in this model. Binary dependent variables are usually analysed within a log-linear framework. However, AMOS 6.0 can only construct path models based on OLS regression. Despite this drawback, OLS regression will give unbiased estimates of changes in the probability of the outcome (being in a university role at Time 3) with changes in independent variables. When standardised estimates are used, the OLS regression coefficient for any variable predicting role status represents the change in standard deviation units of being in a university role with a one standard deviation unit increase or decrease in the predictor variable. This change may be interpreted as the increase or decrease in the probability of the university role outcome occurring at Time 3. While the OLS framework is not ideal for this particular analysis, the model is useful for descriptive purposes, and yields all the other advantages of a path analysis, such as simultaneous estimation of direct and indirect effects. Furthermore, this analysis is mainly concerned with interpreting institutional role status as a mediator of other variables in the model on Time 3 aggression. The binary nature of institutional role status does not alter the way in which indirect effects operating via this variable are calculated. Therefore, the magnitude and significance of these indirect effects may still be interpreted in the usual manner.

main aim is to examine how demographic and other capital predictors measured during childhood and adolescence relate to each other, and the extent to which they may jointly affect Time 3 aggression by influencing different educational and employment experiences in the post-high school years. A secondary aim is to determine whether these indirect connections to aggression via institutional role status are also related to Time 3 aggression via Time 1 or Time 2 bullying.

Selection of variables

As in Chapter 7, decisions about selection of variables for inclusion and modelling of paths between them were guided by theoretical considerations, previous research, and the findings of earlier analyses. The aim was to build a well fitting, parsimonious model containing sufficient information to illustrate how a progression of interrelationships among several demographic and distal Time 1 and Time 2 variables were realised in differential post-high school institutional role status, and how this subsequently increased or decreased the likelihood of physical aggression. When selecting variables, preference was therefore given to those that were related to aggression via relationships with institutional role status. No attempt was made to represent mediated pathways involving drinking, as these were examined in the previous chapter. As noted at the outset, it is recognised that pathways involving institutional role status are not independent of pathways involving drinking, but the small sample size precluded the creation of an integrated model. The use of separate models to describe the two processes sacrifices a sense of overall completeness on the one hand, but permits key paths to be examined in more detail on the other. It should therefore be emphasised that the proposed model does not build upon the model presented in Chapter 7, nor should it be regarded as an alternate or competing model.

Instead, it is simply a way of presenting another portion of the relationships present in the data.

A variable was considered for inclusion if:

a) the variable was identified at stage 1 of the current chapter as a Time 1 or Time 2 predictor of Time 3 institutional role status (see Tables 8.1 and 8.2). Variables that distinguished university - oriented from employment - oriented participants included sex, parent's education, Time 1 impulsivity, and Time 2 academic difficulties.

b) the variable was identified at stage 2 of the current chapter as a predictor of Time 2 academic difficulties. In addition to parental education, qualifying variables were the Time 1 measure of academic difficulties, and Time 1 liking for school (Table 8.3).

c) the variable was identified in Chapter 6 as a predictor of Time 3 aggression. Following the construction of the drinking path model, both Time 1 and Time 2 continuous measures of bullying were selected. Although the importance of Time 2 acknowledgement as an indirect predictor of Time 3 aggression (via Time 2 bullying) was highlighted in both Chapters 6 and 7, measures of shame management were not included in the current proposed model. The reasons for this are discussed shortly.

d) the variable was identified in Chapter 5 as a Time 1 predictor of Time 2 bullying. Apart from Time 1 bullying, significant predictors included Time 1 measures of shame acknowledgement, shame displacement, and impulsivity, as well as the Time 2 measure of shame acknowledgement. Of these contenders, only impulsivity was selected for inclusion in the current model. Measures of shame management were excluded because the focus of the current model was on how Time 1 and Time 2 variables *other* than bullying were indirectly related to Time 3 aggression by the way in which they predicted different post-high school institutional roles. Given the sample size, there was a need to minimise the number of parameters, while still including

sufficient information to illustrate key pathways. As discussed, the decision was made to examine key pathways involving drinking and key pathways involving institutional role using separate models. Since neither Time 1 nor Time 2 measures of shame management were related to institutional role outcome, and were therefore not components of the key pathways to institutional role status, they were not included in the current model.

Model construction

Figure 8.1 outlines the proposed model that was developed to explore to what extent Time 3 institutional role status could be seen as mediating the effect of demographic and selected childhood and adolescence variables on emerging adult aggression. In the previous chapter, adolescent (Time 2) shame acknowledgement was a central ‘high school mediator’ between variables measured in primary school and outcomes in emerging adulthood. Here, high school-period academic difficulties plays a similar, though not identical role. Adolescent academic difficulties was modelled as a mediator of the relation between institutional role in emerging adulthood and sex, parental education, and liking for school and academic difficulties in childhood. Based on earlier analyses, Time 2 academic difficulties was expected to indirectly predict aggression via Time 3 institutional role status. Secondly, Time 1 academic difficulties and liking for school were expected to indirectly predict Time 3 institutional role status via Time 2 academic difficulties.

The analyses presented in stage 1 of the current chapter, however, also identified sex, parent education, and Time 1 impulsivity as direct predictors of Time 3 role status. Based on these analyses, it was expected that male gender and higher Time 1 impulsivity would decrease the likelihood of a university role at Time 3, independent of the effect of Time 2 academic difficulties. Parent education was distinguished from

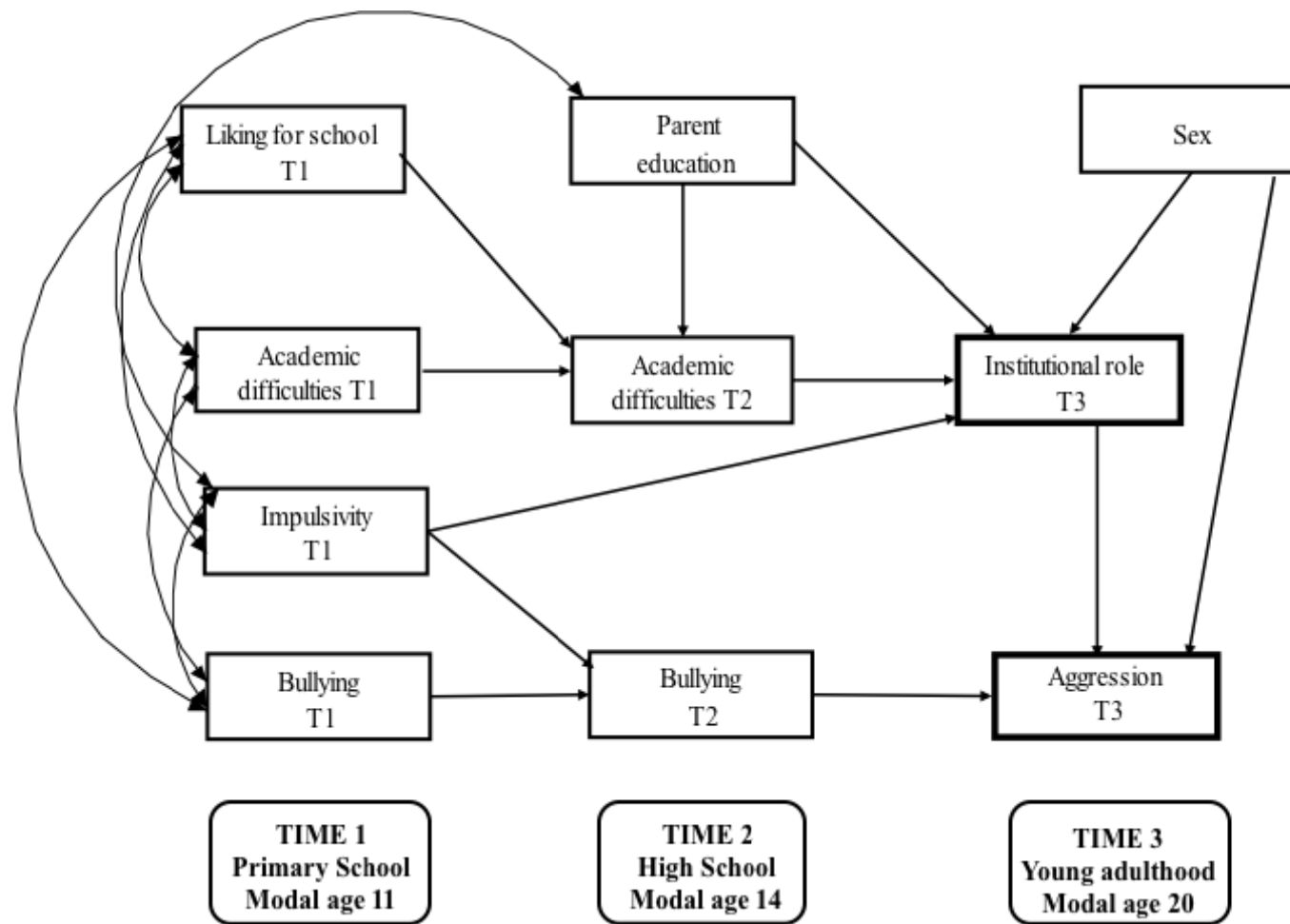


Figure 8.1: Proposed model: Pathways to aggression via institutional role

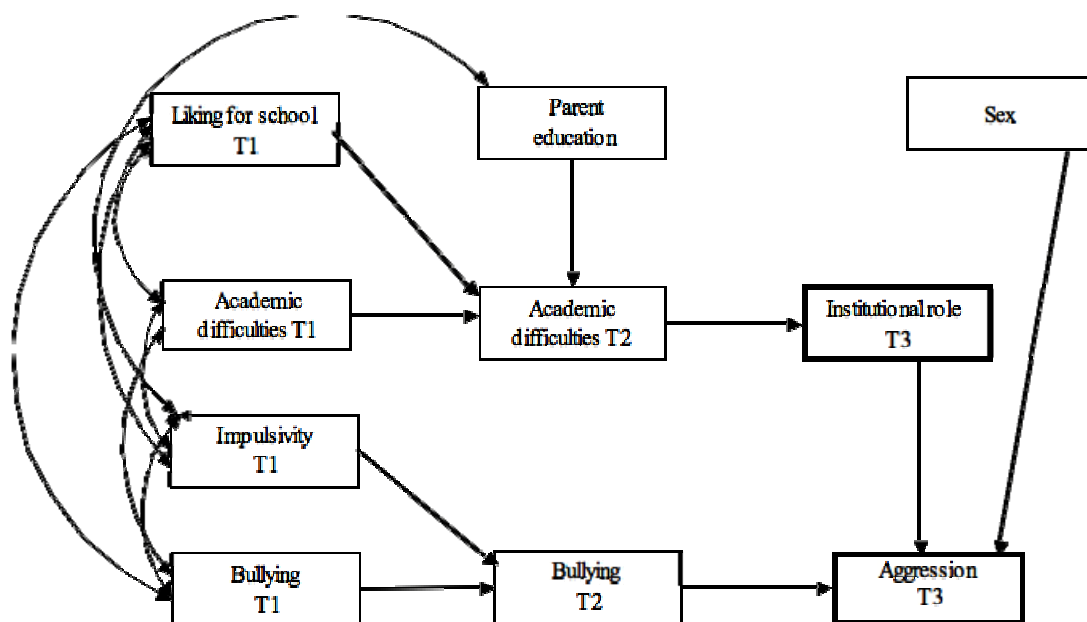
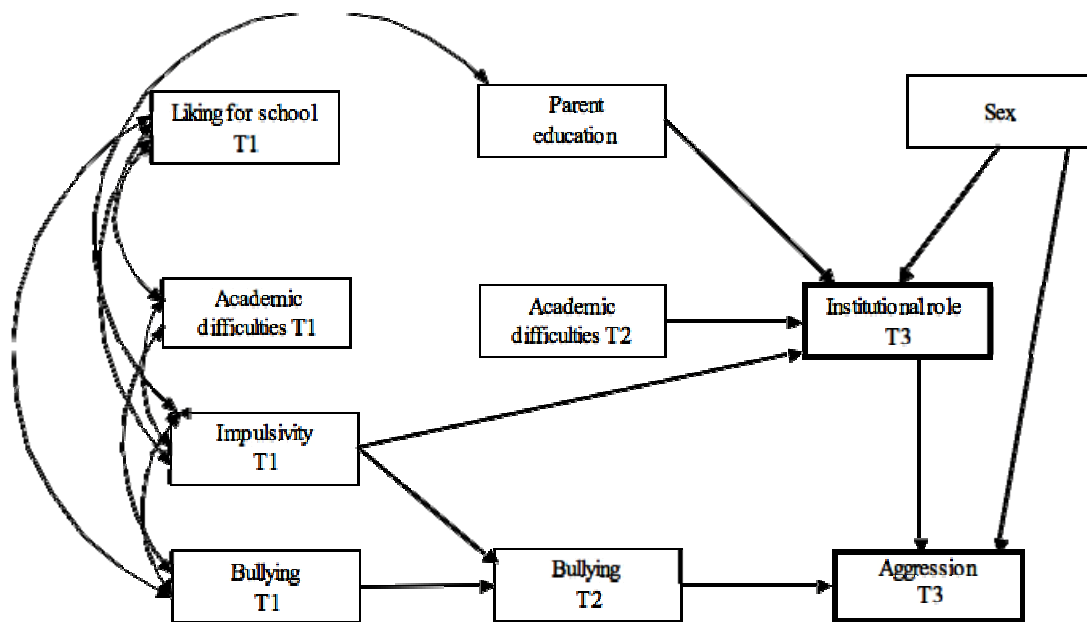
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other variables in the model as the only factor assumed to both directly and indirectly predict Time 3 institutional role status. On the basis of both stage 1 and stage 2 analyses, parental university education was expected to directly increase the likelihood of university attendance at Time 3, but also to indirectly increase this likelihood by decreasing academic difficulties in high school.

Relationships between Time 1 and Time 2 measures of bullying and Time 3 aggression were modelled to match those in the drinking model reported in Chapter 7 (Figure 7.3): Time 1 bullying was indirectly linked to Time 3 aggression by Time 2 bullying. However, as impulsivity was included in the current model and was known to account for some variance in Time 2 bullying controlling for other Time 1 measures (Table 5.4), it was set to directly predict Time 2 bullying.

Table 8.4 Mediated model of pathways to aggression involving institutional role status: Fit statistics for hypothesised and alternative models

	Optimal proposed model	Alternative models	
		A. Direct model	B. Indirect model
χ^2	28.65	72.84	53.27
df	23	26	26
Bollen-Stine bootstrap <i>p</i>	.33		
Comparative Fit Index (CFI)	.971	.756	.858
Root Mean-Square Error of Approximation (RMSEA) and 90% CI	.04 (.00 – .082)	.11 (.08 - .14)	.08 (.05 - .12)
Standardised Root Mean Square Residual (SRMR)	.058	.104	.090



model

Figure 8.2: Alternative models: Pathways to aggression via institutional role

Model testing

Goodness-of-fit indices²² for the proposed model and alternative models are presented in Table 8.4. The proposed model fitted the data fairly well, and accounted for 27% of the variance in Time 3 aggression.

Two alternative models were tested. These models are presented in Figures 8.2 (A) and (B). The stage 1 and 2 analyses suggested that, overall, there were more direct than indirect predictors of Time 3 institutional role status. It was therefore possible that the data would be adequately modelled without any indirect links via Time 2 academic difficulties. Thus, the first alternative model (Figure A) was designed to test whether an adequate fit could be achieved by including only direct paths to institutional role status, with indirect paths via Time 2 academic difficulties omitted. In this model, demographics, Time 1 impulsivity and Time 2 academic difficulties were set to directly predict Time 3 institutional role, but indirect links via academic difficulties at Time 2 were omitted. This direct model did not fit the data as well as the proposed model $\Delta\chi^2(3) = 44.19, p < .001$, indicating that at least some indirect links via Time 2 academic difficulties were needed.

The second alternative model (Figure B) included only indirect paths to institutional role status via Time 2 academic difficulties. For example, parental education was linked to Time 2 academic difficulties, but was not directly linked to Time 3 institutional role status. Similarly, Time 1 impulsivity was set to predict Time 3 aggression via Time 2 bullying, but not via institutional role status. This model was also a poor fit to the data, $\Delta\chi^2(3) = 24.62, p < .001$, indicating that at least some direct paths to institutional role were needed in addition to that from Time 2 academic difficulties.

²² As the value of the Mardia coefficient (= 3.53) indicated significant departure from multivariate normality, Table 7.4 reports Bollen-Stine bootstrapped p values for model χ^2 .

On the basis of these comparisons, it was decided to retain the proposed model in its original form. The standardised path coefficients for this model are displayed in Figure 8.3. Direct and indirect effects of predictors in the model on Time 2 academic difficulties, Time 2 bullying, Time 3 institutional role status and Time 3 aggression, along with 95% confidence intervals, are shown in Table 8.5²³. These results show that, as expected, Time 2 bullying, Time 3 institutional role status and sex had direct effects on Time 3 aggression. Indirect effects in the model were also significantly different from zero.

Interpretation of direct and indirect effects

Following the pattern set in Chapter 7, I organise the discussion of model parameters around two interrelated pathways from primary school experiences to emerging adult aggression. The first of these is the *continuity of behaviour* pathway characterised by Time 1 and Time 2 bullying and subsequent Time 3 aggression, and is outlined in red in Figure 8.3. The second pathway, coloured green, is shaped by relationships between aspects of social and personal capital. This *capital* pathway is primarily protective in nature, realised in a decreased risk of Time 3 aggression by the way in which greater socio-structural and personal resources increased the likelihood of a young person attending university after high school. The aims of the following discussion are to, first, discuss how variables in the capital pathway increased or decreased the probability that a young person would be in a university role at Time 3, and to interpret how institutional role status at Time 3 can be seen as mediating the effect of these earlier measures on aggression during emerging adulthood. Second, I

²³ Because of the departure from multivariate normality and small sample size, I follow the procedures described in Chapter 7 and continue to report bootstrapped bias-corrected percentile estimates of 95% confidence intervals for direct and indirect effects. The discrepancy between the bootstrapped and maximum-likelihood estimates and standard errors was less than .01 averaged over all parameters, indicating that the estimates were not unduly biased due to the small sample size and non-normality.

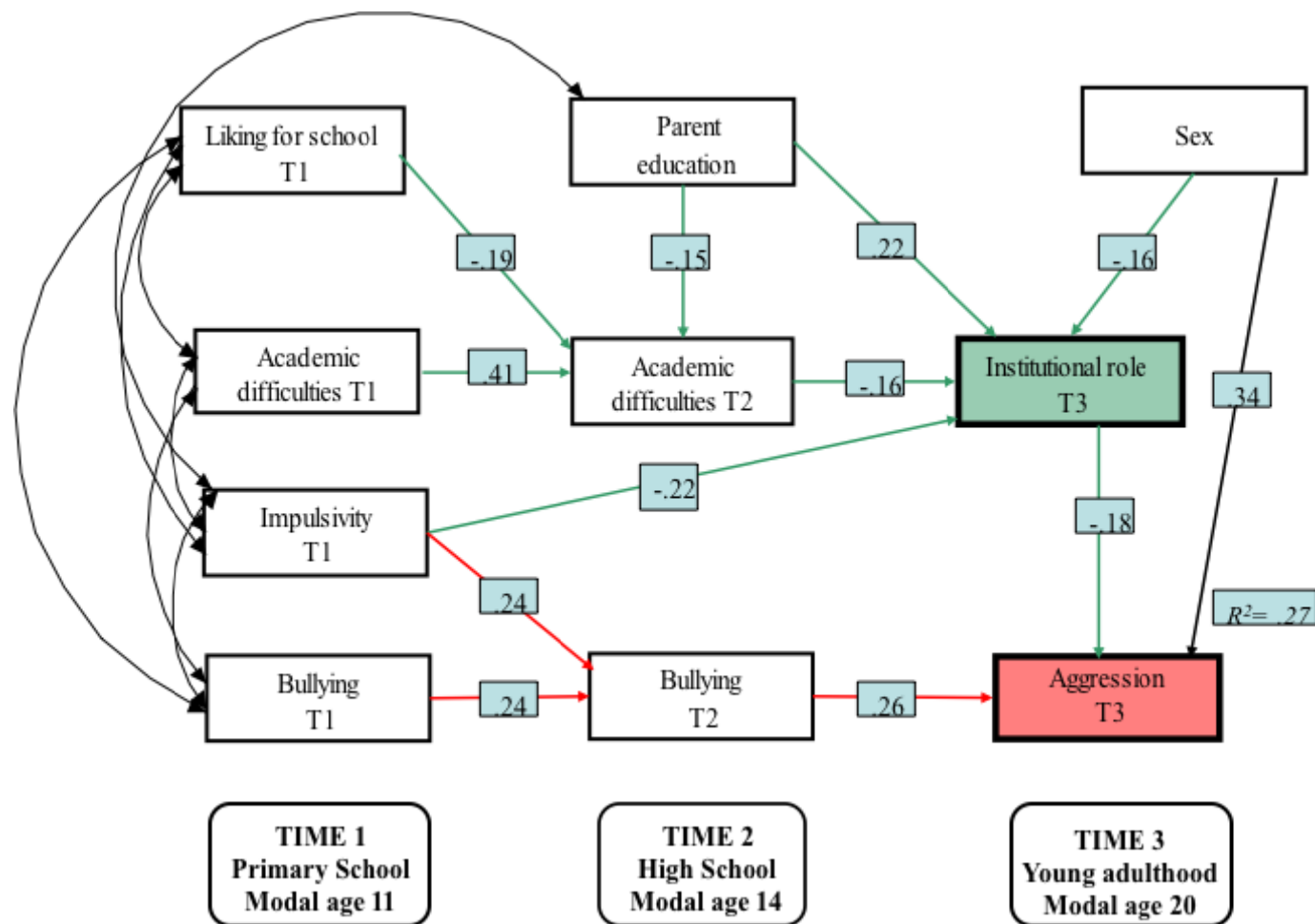


Figure 8.3: Final model: Pathways to aggression via institutional role

Table 8.5 Mediated model of pathways to aggression involving institutional role status: Standardised direct and indirect effects of predictors on Time 2 academic difficulties, Time 2 bullying, Time 3 institutional role, and Time 3 aggression, with bias-corrected bootstrap 95% confidence intervals

	→ Time 2 Academic difficulties			→ Time 2 Bullying		
	Direct			Direct		
	Estimate	95% CI		Estimate	95% CI	
Sex ¹	-	-	-	-	-	-
Parent education ²	-.151*	-.283	-.002	-	-	-
<i>Time 1 measures</i>						
Impulsivity	-	-	-	.236*	.088	.369
Liking for school	-.186*	-.327	-.036	-	-	-
Academic difficulties	.411**	.268	.533	-	-	-
Bullying	-	-	-	.235*	.054	.409
<i>Time 2 measures</i>						
Academic difficulties	-	-	-	-	-	-
Bullying	-	-	-	-	-	-
Institutional role ²	-	-	-	-	-	-

(Table continued on next page)

(Table 8.5 continued)

	→ Time 3 institutional role status						→ Time 3 physical aggression					
	Direct			Indirect via Time 2 academic difficulties			Direct			Indirect via Time 2 academic difficulties, Time 2 bullying and Time 3 role status		
	Estimate	95% CI		Estimate	95% CI		Estimate	95% CI		Estimate	95% CI	
Sex ¹	-.156*	-.300	.002	-	-	-	.341**	.186	.487	.029*	.002	.075
Parental education ²	.216**	.066	.355	.023*	.002	.071	-	-	-	-.044**	-.102	-.011
<i>Time 1 measures</i>												
Impulsivity	-.221**	-.366	-.054	-	-	-	-	-	-	.101***	.041	.190
Liking for school	-	-	-	.029*	.002	.075	-	-	-	-.005*	-.019	.000
Academic difficulties	-	-	-	-.064*	-.134	-.007	-	-	-	.012*	.001	.036
Bullying	-	-	-	-	-	-	-	-	-	.061**	.014	.155
<i>Time 2 measures</i>												
Academic difficulties	-.155*	-.280	-.011	-	-	-	-	-	-	.029*	.001	.076
Bullying	-	-	-	-	-	-	.258**	.092	.423	-	-	-
Institutional role ²	-	-	-	-	-	-	-.183*	-.318	-.028	-	-	-

*** $p < .001$. ** $p < .01$. * $p < .05$. ¹ male = 1. ² university = 1

describe the relationship between the capital pathway and the behavioural pathway in the prediction of emerging adult aggression.

Figure 8.3 shows that a university role at Time 3 was more likely for participants who reported less academic difficulties during high school, had a parent who attended university, were female, and who were less impulsive in childhood. I focus first on the social capital aspects of these relationships: academic difficulties, parent education, and gender. Level of perceived academic difficulties represent social capital skills that are acquired by individuals over time. Lower perceived academic difficulties in high school was associated with lower perceived difficulties in primary school, and more positive perceptions of the primary school environment. The progression of links from positive adjustment at Time 1, to low academic difficulties at Time 2, and a university-oriented role status at Time 3 may indicate, how, during the school years, participants acquired the academic resources required to open up occupational choices in early adulthood. Finally, physical aggression was less likely amongst those participants who attended university at Time 3. Thus, academic resources acquired (or not) during primary school and high school exerted small but significant indirect effects (see panel 4, Table 8.5) on adult aggression by the way in which they influenced the probability of participants being in a university or employment role in the post-high school years.

In contrast to academic resources that are acquired, parent education is a socio-economic resource that is available to people from birth. The current model shows that parental university education directly increased the likelihood of a university role in early adulthood, but also had an indirect effect through association with children's lower academic difficulties in high school. This suggests that the socio-economic resources of the family of origin influenced children's acquisition of academic skills during the school years. However, it is apparent from Figure 8.3 and Table 8.5 that the

direct effect of parent education on probability of a participant attending university was greater than the total effect of acquired academic resources. Parent university education increased the probability of university attendance by 11%, while a one standard deviation unit increase in academic difficulties during high school decreased this probability by 8%²⁴. Given that parental education had a unique and significant effect on Time 3 role status net of the effect of academic difficulties, it appears that this factor continued to provide human capital resources to children above and beyond its relation with academic capacity in high school. Accordingly, about 90% of the total indirect effect of parental education on aggression ($-.044$, see panel 4, Table 8.5) was attributable to the way in which parental university attendance directly increased the probability of child university attendance ($.216 \times -.183 = -.04$), rather than the more indirect path via decreased Time 2 academic difficulties ($-.151 \times -.155 \times -.183 = .004$).

A third social capital path was that associated with gender. Women were more likely to attend university at Time 3, and were therefore less likely to be aggressive. This effect was of the same magnitude as the indirect effect of Time 2 academic difficulties on aggression ($-.029$). Sex was not associated with Time 2 difficulties, showing that the probability of university attendance was higher for females than males regardless of acquired academic skills in mid-adolescence.

The remaining relationship within the capital pathway to aggression concerned childhood impulsivity, an aspect of personal capital. Children who reported higher levels of impulsivity during primary school were less likely to attend university at Time

²⁴ As discussed, the coefficients for the direct effects of sex, parental education, Time 1 impulsivity and Time 2 academic difficulties on Time 3 institutional role status represent the change in standard deviation units of being in a university role with one standard deviation unit increases or decreases in these four predictors. Because the split between university and employment roles was almost exactly 50/50 (there were 76 participants in a university role and 75 in an employment role), the standard deviation for institutional role status is .50. The product of this standard deviation and a specific regression coefficient yields the increase or decrease in the probability of the university outcome associated with that predictor. For example, the coefficient for Time 1 impulsivity = $-.22$, which means that a one standard deviation unit increase in impulsivity *decreased* the probability of university attendance at Time 3 by 11%.

3, and this subsequently increased the risk of physical aggression. It was interesting that the effect of Time 1 impulsivity in the model was independent of the effects of acquired academic resources. Early behavioural dysregulation appeared to affect aggression, not by restricting the acquisition of academic skills in high school, but because it had a direct effect on institutional role in early adulthood.

Turning to the relationship between the capital pathway and the behavioural bullying pathway, it is apparent that the key linking variable is Time 1 impulsivity. Impulsivity predicted increased Time 1 bullying and an employment-oriented Time 3 role status, and thus indirectly increased the likelihood of Time 3 aggression via both pathways. Because of its direct associations with bullying and role status, the total indirect effect of impulsivity (.101, panel three, Table 8.5) was the largest in the model. Moreover, the indirect effect for aggression was fairly evenly shared between the two pathways: 40% of the indirect effect operated via Time 3 role status ($-.221 \times -.183 = .040$) and 60% via Time 2 bullying ($.236 \times .258 = .061$).

Summary

Overall, the model in Figure 8.3 shows that socio-economic status and measures of childhood functioning began to shape pathways to adult aggression years before the young people in this study graduated from high school. These factors set in motion several inter-related processes of risk and protection that culminated in a greater or lower probability of aggression in adulthood. Two features in particular may be highlighted. First, the capital pathway suggests that the significance of early measures of human and personal capital resources for adult aggression resides in the way in which they affected a key life-course contingency: undertaking university education or not in the immediate post-high school years. Second, the model illustrates the pervasive effect of early behavioural dysregulation for adult aggression.

Stage 4: Is the capital pathway to aggression the same or different across bully trajectory groups?

The social and personal capital predictors of role status discussed above were identified at the level of the whole sample. The moderation analyses in Chapter 6, however, showed that the relationship between institutional role status and aggression varied according to developmental history of bullying. University roles were only associated with decreased levels of physical aggression for participants who were members of the persistent or adolescent-onset bully trajectory groups. In this section, I examine whether the same pattern of variables increased or decreased the chances of attending university equally across bully trajectory group. Data are presented following the procedure described at stage 4 of Chapter 7.

Figures 8.4 (A) to (D) show the distribution of scores on predictors of role status for university-oriented and employment-oriented participants within each bully trajectory group. The upper sections of Figures (A) to (D) show mean z scores for the continuous predictors of role status, indicating how far each subgroup deviated from the sample-level normative standard. The lower sections plot the log odds-ratios for the dichotomous predictors of role status, including sex (male = 1) and parental education (attended university = 1). These scores indicate the degree of association between male gender/parental university education and the university role outcome within each different bully trajectory group. Statistics for z -scores, odds- and log odds-ratios may be found in Table 8.6.

If pathways to different Time 3 institutional roles are the same across the four groups, the following four patterns should be observed in Figures 8.4 (A) to (D).

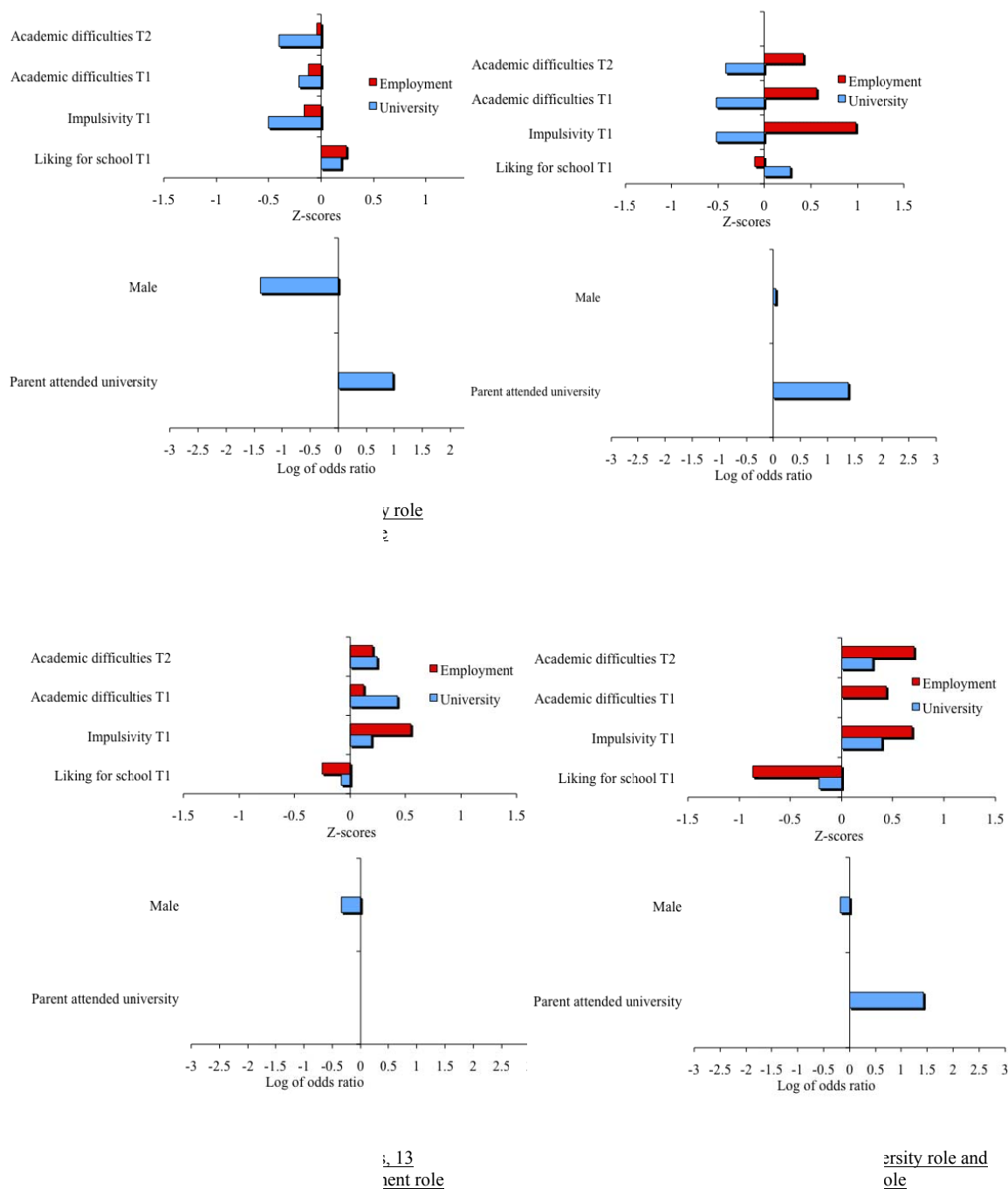


Figure 8.4: Mean scores and log odds-ratios for predictors of Time 3 institutional role status within bully trajectory groups

(1) The pattern of means for university-oriented participants in each bully group should reflect more positive adjustment on the four continuous predictors of institutional role status (Time 1 academic difficulties, liking for school, and impulsivity; and Time 2 academic difficulties) relative to their employment-oriented counterparts. For example, scores on academic difficulties and impulsivity for university-oriented individuals in the persistent bullying group should be lower than scores for persistent bullies in employment-oriented roles. Similarly, non-bullies in a university role should score lower on academic difficulties and impulsivity relative to non-bullies in employment roles.

(2) Regardless of Time 3 institutional role status, the means for the persistent and adolescent-onset bullying groups should reflect worse adjustment on the four continuous predictors of role status than the means for the non-bully group. The pattern should conform to results of the group comparisons reported in Chapter 5 (see Table 5.2 and Figure 5.1), which showed that persistent bullies reported significantly higher scores than non-bullies on Time 1 impulsivity, and significantly lower scores for Time 1 liking for school and Time 1 and Time 2 academic difficulties. Thus, participants in the persistent bully group should deviate further from the sample norm on these predictors than participants in the non-bully group, regardless of Time 3 institutional role. Adolescent-onset bullies also reported generally poorer adjustment on these measures than non-bullies, although these group differences were statistically significant only for measures of Time 1 impulsivity and Time 1 academic difficulties. Mean z -scores for both university- and employment-oriented participants in the adolescent-onset group should therefore reflect overall poorer adjustment on continuous predictors than non-bullies, but should deviate furthest from the norm on Time 1 measures of impulsivity and academic difficulties. No specific predictions are made regarding patterns for the child bully group, as comparisons with this group were not reported in Chapter 5.

Table 8.6: Predictors of Time 3 institutional role status: Mean z-scores for continuous predictors of employment and university role within the non-bully, child-limited, adolescent-onset, and persistent bully groups, and odds ratios of parent education and male gender

	z-score ($M \pm SD$)							
	Non-bullies (n=78)		Child-limited (n=26)		Adolescent (n=24)		Persistent (n=23)	
	Employment role (n = 36)	University role (n=42)	Employment role (n=12)	University role (n=14)	Employment role (n=11)	University role (n=13)	Employment role (n=16)	University role (n=7)
<i>Continuous predictors</i>								
Academic difficulties (Time 2)	-.04 $\pm$ 0.7	-.40 $\pm$ 0.8	.42 $\pm$ 1.0	-.42 $\pm$ 0.8	.2 $\pm$ 1.4	.24 $\pm$ 1.2	.71 $\pm$ 1.3	.30 $\pm$ 0.8
Academic difficulties (Time 1)	-.12 $\pm$ 0.9	-.21 $\pm$ 0.9	.56 $\pm$ 0.9	-.52 $\pm$ 1.0	.12 $\pm$ 0.8	.43 $\pm$ 1.3	.44 $\pm$ 1.2	0.00 $\pm$ 1.0
Impulsivity (Time 1)	-.16 $\pm$.07	-.50 $\pm$ 1.0	.98 $\pm$ 0.7	-.52 $\pm$ 1.3	.55 $\pm$ 0.7	.19 $\pm$ 1.0	.69 $\pm$ 0.6	.39 $\pm$ 0.8
Liking for school (Time 1)	.24 $\pm$ 0.8	.19 $\pm$ 0.9	-.11 $\pm$ 0.9	.28 $\pm$.8	-.25 $\pm$ 0.8	-.08 $\pm$ 1.4	-.87 $\pm$ 1.3	-.22 $\pm$ 0.9
Odds ratios (Log of odds ratios)								
<i>Dichotomous predictors</i>	Non-bullies (n=36 parents attended university)		Child-limited (n=11 parents attended university)		Adolescent (n=5 parents attended university)		Persistent (n=11 parents attended university)	
Parent education ¹	2.7 (.98)		4.0 (1.38)		-		4.2 (1.43)	
	Non-bullies (23 males)		Child-limited (11 males)		Adolescent (12 males)		Persistent (17 males)	
Sex ²	.25 (-1.38)		1.05 (.05)		.71 (-.34)		.83 (-.18)	

(3) Regardless of bully trajectory group, the log odds-ratios for sex should indicate a decreased probability of Time 3 university role status for male participants.

(4) Regardless of bully trajectory group, the log odds-ratios for parental education should indicate an increased probability of Time 3 university role status for participants whose reporting parent attended university.

Figures 8.4 (A) to (D) reveal that the data were generally consistent with expectations, although some departures from the overall pattern were apparent for the adolescent-onset group.

1: University-oriented participants should exhibit more positive adjustment on continuous Time 1 and Time 2 measures than employment-oriented participants, regardless of bully trajectory group

Consistent with the first pattern, the figures show that, overall, university-oriented participants reported scores that reflected better adjustment on the four continuous predictors of role status than employment-oriented participants in each bully group. Young people in a university role in the non-bully (Figure A) and child-limited (Figure B) bully groups scored below the mean on impulsivity and Time 1/Time 2 measures of academic difficulties, while scores for those in an employment role were either closer to the mean (in the non-bully group) or substantially above the mean (in the child bully group). In these two bully groups, differences between university and employment-oriented participants were least pronounced for Time 1 liking for school. Non-bullies in both roles reported better than average liking for school, and scores for those in an employment role in the child-limited group were close to the normative mean.

The expected differences between young people in different institutional roles were also apparent for the persistent bully group (Figure D). Although scores for both

university-oriented and employment-oriented participants in this group deviated from the norm in the direction of poor adjustment, scores were consistently further from the normative mean for former persistent bullies in an employment role at Time 3. In fact, university-oriented participants in this group scored exactly on the normative mean for Time 1 academic difficulties, which is why there is no visible blue bar for this variable in Figure D.

In contrast, the adolescent-onset bully group (Figure C) did not conform to the expected pattern of differences between institutional role subgroups that were generally apparent in the other three bully trajectory groups. The only variable that reflected the prevailing pattern was Time 1 impulsivity, for which the employment-oriented participants reported higher scores. The remaining three variables presented a confused picture. Mean scores on Time 1 liking for school and Time 2 academic difficulties was very similar for both institutional role groups. Furthermore, university-oriented participants reported *higher* Time 1 academic difficulties than employment-oriented participants.

2: Members of the three bully groups should exhibit poorer adjustment on continuous Time 1 and Time 2 measures than the non-bully group, regardless of Time 3 institutional role status

Consistent with the second aforementioned pattern (2) comparison of Figures (A) and (D) confirms that, regardless of Time 3 role status, participants in the persistent bully group scored worse on all four predictors than their counterparts in the non-bully group. With the exception of Time 1 academic difficulties, even university-oriented participants in the persistent group scored below the mean on Time 1 liking for school, and above the mean on Time 1 impulsivity and Time 2 academic difficulties. In the

non-bully group, by contrast, scores reflected better than normative or near normative adjustment in both the university- and employment-oriented subgroups.

Comparison of Figure C and Figure A shows that the pattern of scores for participants in the adolescent-onset group was a mirror image of the pattern observed within the non-bully group. Regardless of Time 3 institutional role, scores for adolescent-onset bullies were below the mean on liking for school and above the mean on impulsivity and Time 1/Time 2 academic difficulties. Consistent with the group comparisons reported in Chapter 5, deviations from the mean in the adolescent-onset group were most pronounced for Time 1 academic difficulties and impulsivity.

The pattern of scores for the child-limited group (Figure B) was strikingly similar to the pattern of risk for frequent drinking observed in Chapter 7 (see Figure 7.4 (B)). Scores for the university-oriented participants in the child-limited group were quite similar to scores for university-oriented participants in the non-bully group: well below the mean for impulsivity and Time 1/Time 2 academic difficulties, and above the mean for Time 1 liking for school. However, the pattern of scores for employment-oriented participants in the child-limited group more closely resembled the patterns observed for participants in employment roles in the persistent and adolescent-onset bully groups: scores were above the mean for academic difficulties and impulsivity, indicating poorer adjustment, and slightly below the mean on liking for school. As in Chapter 7, this suggests that any differences between the child-limited and non-bully groups applied only to that subgroup of child-limited bullies who were in an employment role at in early adulthood.

3: Male gender should be associated with a decreased probability of attending university, regardless of bully trajectory group

The data were only marginally consistent with this expectation. Odds ratios for male gender mostly indicated decreased probabilities of Time 3 university role status for male participants within each bully trajectory group. This was most clearly apparent in the non-bully group, amongst whom male gender was associated with a 75% decrease in the odds of university attendance (see Table 8.6). The odds were much closer to equal within the other three bully trajectory groups. For example, male gender in the persistent bully group was associated with only a 17% decrease in the odds of university attendance, while in the child-limited group, odds for male gender were slightly increased. As discussed in Chapter 7, this pattern may be attributable to the increased proportion of males to females in the three bullying groups. Although the overall pattern is consistent with the results suggested from the path model, it does appear that it was deficiencies in capital represented by the other variables, rather than gender, that decreased the probability of future university attendance for participants who were bullies at any time during the school years.

4: Parental university education should be associated with an increased probability of attending university, regardless of bully trajectory group

As expected, the odds ratios for parental university education indicated an increased probability of university attendance for participants within each bully trajectory group. Amongst participants who were non-bullies, child-limited bullies, and persistent bullies, parental university education increased the odds of Time 3 university attendance between 2.7 and 4.2 times. Parental university education was also positively associated with role status amongst the adolescent-onset bullies. In fact, *all* of the adolescent-onset participants whose parent had attended university were themselves at

university at Time 3. As this produced an empty cell (none of the university-educated parents of adolescent-onset bullies had a child in a Time 3 employment role), it was not possible to calculate an odds ratio for this group. Thus, the overall pattern for parental education was consistent across the four bully trajectory groups.

To summarise, a university-oriented role status during emerging adulthood was associated with aspects of social capital and personal capital within each bully trajectory group. Parental university education was reliably associated with a greater likelihood of participants' university attendance in each group. The effect of female gender, in contrast, was strongest for the non-bully group. This raises the possibility that, for 'at risk' groups, other aspects of maladjustment (e.g., impulsivity) might be more salient predictors of occupational outcomes.

Means for the continuous predictors showed that the university-oriented participants in each bully group reported less academic difficulties, less impulsivity, and greater liking for school than the employment-oriented participants. Only in the persistent bully group did scores deviate from the sample-level normative mean for both role status groups. As in Chapter 7, however, there were exceptions to these patterns within the adolescent-onset bully group, suggesting that pathways to post-high school educational and employment outcomes may be different for these individuals. Despite these aberrations, the overall patterns discussed seem consistent enough to assume that pathways to institutional role status outlined in Figure 8.3 represent longitudinal relationships that applied to the majority of participants in the study.

Chapter summary

With Chapter 7, the current chapter was designed to address the second major research question: What are the underlying longitudinal pathways in the developmental course of aggressive behaviour from childhood bullying to early adult physical

aggression? The current chapter addressed this question with regard to pathways to aggression that involved different institutional roles in the years after finishing high school. The overall objective was to establish whether interrelationships between several mediating Time 1 and Time 2 variables would help explain the bullying – aggression connection by the way in which they increased or decreased the likelihood that a participant had attended university by Time 3.

The first step was to examine whether any of the Time 1 and Time 2 variables that did not directly predict Time 3 aggression might instead indirectly relate to this outcome via links to Time 3 role status. In the first stage of the analyses, I used logistic regression to identify whether any of the Time 1 and Time 2 variables had the capacity to distinguish participants who were in a university-oriented role in early adulthood from those who were in an employment-oriented role. Female gender, parental university education, childhood impulsivity, and a lower level of perceived academic difficulties during high school emerged as significant predictors of a university-oriented role status. Thus, Time 2 academic difficulties was a potential intermediary in the relationship between primary school experiences and Time 3 role status/aggression. The second stage of the analyses involved taking a step back to identify which earlier factors predicted high school academic difficulties. Results revealed that greater Time 2 difficulties was, not surprisingly, most strongly predicted by greater Time 1 difficulties. However, a lower liking for school at Time 1 and less parental education were also significantly associated with perceived difficulties in high school.

Taken together, the results from these first two stages suggested that Time 3 role status was predicted by aspects of social and personal capital. I argued that sex, parental education, liking for school and academic difficulties reflected socio-economic and acquired resources that structure occupational outcomes throughout the life course, while impulsivity reflected a personal behavioural characteristic that could limit

motivation and capacity for occupational achievement. Stage 3 integrated these findings with those from Chapter 5 to construct and test a mediated model of pathways to aggression involving institutional role status. The final model highlighted the long-term consequences of two early-in-life factors: parental education and childhood impulsivity. Both these factors were related in direct and indirect ways to adult aggression by the way they influenced early adult university attendance. In the final stage of the analyses, I considered whether the mediated relationships outlined in the model were different or similar across the four bully trajectory groups. Overall, the pattern of results suggested that the social and personal capital predictors of role status were relatively consistent across trajectory groups. However, in a similarity to the drinking model in Chapter 7, some exceptions to the overall pattern were apparent for the adolescent-onset bully group.

To summarise, the results presented in Chapters 6, 7 and 8 have painted quite a rich portrait of three interrelated yet coherent chains of events linking childhood bullying with adult physical aggression. The first chain of events has been described as the *continuity of behaviour* pathway. In Chapter 6, it was shown that, taken alone, school-years bullying was not a particularly strong predictor of adult aggression. However, when considered in combination with Time 3 drinking and institutional role status, it became apparent that these proximal life events distinguished former ‘at risk’ bullies who behaved aggressively as early adults from those other former bullies who were less aggressive. Specifically, individuals who had been persistent bullies in primary school and high school were more likely to be aggressive if they were drinking frequently or not attending university at Time 3, and individuals who had taken up bullying in high school were more likely to be aggressive only if they had not attended university. Thus, in general, positive and negative effects of the experiences occurring

after high school were most salient for the participants who were at greatest behavioural risk.

Chapters 7 and 8 aimed to provide a fuller account of the earlier experiences that lead to these important proximal outcomes. The analyses centred around two further mediated pathways showing how other experiences during the school years increased or decreased the risk of aggression via the Time 3 transition experiences. I argued that the drinking model in Chapter 7 highlighted a *socio-emotional* pathway, in which positive school adjustment over the primary school-high school transition facilitated continued adaptive shame management, decreasing the risk of frequent adult drinking, and in turn, aggression. Importantly, this pathway was related to the continuity of behaviour pathway via a key linking variable: Time 2 shame acknowledgement. Thus, socio-emotional functioning during the school years affected adult behaviour in more than one way.

In contrast, the institutional role model in the current chapter was characterised by strong influences from socio-structural factors and childhood behavioural dysregulation. I argued that the model illustrated a *capital* pathway, in which aspects of the social and personal resources available to the young people throughout the study influenced the likelihood of university attendance.

CHAPTER 9:

DISCUSSION

This project aimed to examine how the interplay between distal and proximal factors at times of transition shaped developmental pathways from school bullying to physical aggression in emerging adulthood. The main focus was on the significance of two sets of experiences that accompany the transition into emerging adulthood for continuity and discontinuity in aggression amongst young people with different trajectories of bullying during the school years. The first of these transition experiences was frequency of drinking alcohol, and the second was institutional role status, a variable capturing whether a participant was primarily oriented towards employment or university study in the post-high school years. I set out to address four broad research questions: (1) To what extent do bullying and socio-emotional functioning during school predict adult physical aggression? (2) Do drinking and institutional role during the transition to adulthood have any additional effects on aggression, and does this vary across the four bully trajectory groups? (2) What are the mediated longitudinal pathways linking school bullying with adult aggression? (3) To what extent are these mediated pathways from childhood the same or different across the four bully trajectory groups?

With respect to the first two questions, analyses reported in Chapter 6 showed that bullying did predict aggression, but only under certain conditions. The two emerging adult transition experiences moderated the relationship between developmental histories of bullying (between ages 10 and 14) and emerging adult (age 20) levels of physical aggression, including fighting, physical assault, and violent threats. First, drinking was significantly associated with more frequent adult aggression, but only for participants who persisted in bullying across both primary school and high

school. In other words, the small number of persistent bullies who did not drink frequently were less aggressive than those who did, and indeed were no more aggressive than the sample average. For the non-bullies, child-limited bullies, and adolescent-onset bullies, drinking frequency was not associated with frequency of adult physical aggression. Second, university participation by the Time 3 assessment was associated with significantly lower levels of aggression, but only for adolescent-onset and persistent bullies. Again, this means that the persistent and adolescent-onset bullies who went to university were less aggressive than those who did not attend university, and once again, their levels of aggression were not significantly greater than average. Finally, attending university or not was essentially unrelated to aggression for child-limited bullies and non-bullies.

In the first part of this chapter I discuss how the moderating effects of drinking and institutional role status on the bullying-aggression connection relate to findings concerning patterns of continuity and change in aggression in the broader developmental literature. However, it should be emphasised from the outset that the relationship between bullying during the school years and adult physical aggression cannot be interpreted as *change* in behaviour, as prior measures of physical aggression were not available. Rather, the effects simply show that one manifestation of aggression in childhood and adolescence is related, under specific conditions, to a different manifestation of aggression in adulthood.

In the remainder of the chapter I confront more complex issues. The importance of drinking and institutional role status for former bullies naturally leads to a desire to know *why* these factors had the effect that they did. For instance, what were the situational, psychological or pharmacological mechanisms by which very frequent drinking increased aggression for persistent bullies? What was it about university study that was beneficial for young people who had been bullies during adolescence? The

absence of other Time 3 measures of functioning in the present study means that these questions cannot be answered with any certainty at this time. However, the effect of the Time 3 transition experiences on the bullying aggression connection is only half the story. Findings relating to the third and fourth research questions (reported in Chapters 7 and 8) showed that the transition to adulthood was not the only important developmental period in these young people's lives: there were interconnecting progressions of experiences during primary school and high school that had different consequences both for bullying during the school years, and for future adult outcomes. Though the final links in the chain of events—drinking, institutional role status, and their relationships to aggression—appeared to 'matter' only for the behaviour of the most aggressive participants, there were earlier pathways of risk and protection that contributed to whether a participant *would*, for example, drink frequently or attend university as a young adult. Speculation about possible mechanisms by which the Time 3 transition experiences helped or hindered former bullies should therefore be made with reference to the earlier school-years factors that lead to these features of young adult life.

In the last section of this chapter I consider the implications of the mediated pathways to drinking and institutional role status for explaining the moderating effect of these transition experiences for the bullying- aggression connection. Following the pattern set in previous chapters, I begin with drinking and conclude with institutional role status.

Accounting for heterogeneity in the prediction of emerging adult physical aggression from trajectories of school bullying

Research on developmental trajectories of problem behaviour (e.g., aggression, bullying, delinquency, offending) generally show that a broad distinction may be drawn

between individuals who display persistently high levels of problem behaviour throughout childhood and adolescence, and individuals whose difficulties begin or escalate during adolescence. These groups are characterised by different etiologies and sets of early risk factors (Moffitt, 2007; Pepler, et al., 2008). Consistent with this literature, the persistent, adolescent-onset, child-limited and non-bullies in this study differed on measures of functioning during the school years. Persistent bullies reported significantly poorer functioning than other groups on measures of impulsivity, school adjustment and shame management in both primary school and high school. Adolescent-onset bullies are best described as falling somewhere between the never-bullies and the persistent bullies in terms of adjustment.

Longitudinal research further shows that these groups differ in their adult behavioural outcomes, with the persistent group least likely to decline in their use of aggression in early adulthood. However, there is also considerable variation in patterns of continuity and change during adulthood, even amongst high-risk groups. There is debate in the literature about the extent to which such variation in adult behaviour is best accounted for by distal or proximal factors (Farrington, 2007a).

In this study, both the past and the present were important. As expected, bullying in childhood and adolescence was associated with an increased frequency of physical aggression in early adulthood. Nevertheless, with other variables, especially sex, controlled, bullying at school was a relatively poor predictor of adult physical aggression at the whole sample level. Contrary to expectations, even the trajectory-group measure of bullying failed to account for significant variance in Time 3 aggression after taking into account the effects of male gender and low Time 2 shame acknowledgement. Nor did the other measures of shame management or school adjustment directly contribute to the prediction of adult aggression. The weakness of these longitudinal links may well reflect the fact that the general measure of bullying

was not a measure of violent aggression, and probably captured both relational and overt aggressive acts. As violence-specific longitudinal studies generally demonstrate strong continuity from physical aggression in childhood and adolescence and violence in early adulthood (Huesmann & Moise, 1998) it is likely that specific Time 1 and Time 2 measures of violence would have been more strongly related to Time 3 physical aggression. On the other hand, some researchers argue that it is difficult to accurately predict which youths will be violent on the basis of prior aggression and other factors measured earlier in life (Herrenkohl, et al., 2000).

Given the relatively weak predictive power of past bullying for adult aggression, it is perhaps not surprising that the Time 3 transition experiences (the present) were related to current behaviour. Once frequency of drinking and institutional role were taken into account, the only other factor directly associated with aggression was male gender. Importantly, however, these effects were not uniform across the entire population of former bullies. Conversely, it could also be said that the effect of distal risk in the form of bullying only exerted its influence on later physical aggression under certain adult conditions. That is, both the past and present were important, but their effects only became apparent when considered in combination.

Comparisons with other studies

While this study did not examine continuity in serious violence or delinquency, but simply the link between school bullying and adult physical aggression, the findings nevertheless highlight the generality of early adult ‘turning point’ or ‘ensnaring’ effects as they relate to change in a wide range of problem behaviour. This study suggests that such effects extend to the quite common behaviour of school bullying. It is therefore interesting to consider how the present findings relate to analyses of persistence and desistance from antisocial behaviour in early adulthood in the broader literature.

It is generally agreed that declines in offending during adulthood are likely to be facilitated by positive life events and the formation of social bonds, and hindered by snares such as substance use (Farrington, 2007b). There is disagreement, however, about how such factors relate to continuity and discontinuity in antisocial behaviour across different antisocial trajectory groups. One prominent issue is whether life experiences shown to be broadly associated with declines in antisocial behaviour during adulthood will function differently for life-course persistent and adolescence-limited young people. There has in particular been debate regarding Moffitt's (1993; Moffitt, et al., 2002) assertion that turning point opportunities will apply mostly to adolescent-onset rather than life-course persistent offenders.

As Roisman and colleagues (2004) point out, the proximal correlates of varied behavioural outcomes during early adulthood within adolescence-limited and life-course persistent groups have been less thoroughly examined than have the distal predictors of continuity and discontinuity in antisocial behaviour between the groups. In terms of the consequences of school bullying for adult aggression, the present study showed that adult transition experiences were somewhat more consequential for *persistent* bullies, rather than adolescent-onset bullies. In other words, for those who were *most* troubled during school, drinking at above-average frequency during emerging adulthood was *most* risky, and going to university after high school was *most* beneficial.

These findings are both consistent and inconsistent with several aspects of research discussed in Chapter 2 demonstrating varied effects of early adult life experiences for persistence and desistance in patterns of offending and violence from childhood and adolescence. For example, Felson and colleagues' (Felson, Savolainen, et al., 2008; Felson, Teasdale, et al., 2008) analyses of North American and Finnish adolescents showed that the effect of frequent drinking on violence was strongest for

those individuals who had been most violent in the past. The lack of association between drinking and aggression for adolescent-onset bullies in the present study, however, is at odds with Moffitt's (1993) hypothesis that desistance in adolescent-onset offending will be delayed by snares like substance use, as well as Hussong and colleagues' (2004) analysis of Dunedin data revealing a time-varying 'ensnaring' effect of drinking on antisocial behaviour that appeared consistent across the wider population of emerging adult males. The nature of bullying and the way it was assessed in this study may provide the basis for reconciling these inconsistencies. As noted, the measure did not tap violent acts. It may be that only the most troubled group—the persistent bullies—were aggressive enough to have committed acts of violence prior to emerging adulthood, leading the magnifying effect of drinking to apply only to this group. It could be that adolescent-onset bullies are instead at risk of other negative drinking-related problems, such as drink driving, accidents and injury, and victimisation.

The studies reviewed in Chapter 2 examined a range of adult work and study experiences, the effects of which ranged from positive to negative to zero across different populations. Here, university study was shown to reduce adult aggression amongst former persistent and adolescent-onset bullies. The fact that this 'promotive' effect was about twice as large in the persistent bully group as it was in the adolescent-onset group is the opposite pattern to what would be expected based on Moffitt's developmental taxonomy, which predicts 'turning point' effects only for adolescent-limited offenders. However, it is broadly consistent with longitudinal studies of childhood adversity in which protective factors such as nurturant parenting predict positive adult outcomes most strongly for groups who had in other respects suffered the most severe early adversity (Rutter, 1987). Though university study is not one of the early- in- life protective factors most usually implicated in risk factor research, its effects may nonetheless reflect a more general mechanism by which the greatest

benefits of positive life events are reaped by those who encounter such events equipped with the least resources.

The university effect also bears some resemblance to findings from Roisman and colleagues' (2004) study. Amongst their sample of high-risk young adults, positive work and study experiences in the early 20s were associated with desistance from externalising behaviour only for young people who had been persistently antisocial throughout childhood and adolescence, rather than those in the adolescent-onset group. These researchers argued that, given the persistently antisocial groups' failures in the developmental tasks of childhood and adolescence, opportunities to succeed in emerging developmental domains would enable them to escape the past patterns of dysfunctional person-environment transactions that maintain antisocial behaviour. In the present study, however, there appeared to be some benefit of university study for adolescent-onset bullies as well. That the effect was not as strong for adolescent-onset bullies as for persistent bullies is apparently at odds with Moffitt's predictions about desistance from more serious externalising behaviour, but this contrast should be considered against other aspects of the taxonomy. Contrary to what some researchers have interpreted from Moffitt's hypothesis that adolescent-limited offenders will, by definition, desist during adulthood, her taxonomy does not treat adolescent-limited offending as benign. Rather, she predicts delayed desistance for members of this group who become entangled by snares, or whose adolescent behaviour has other occupational and educational 'knock-on' effects that limit adaptive functioning in early adulthood. Although, as noted, the age 26 follow-up (Moffitt, et al., 2002) of the Dunedin sample did not examine within-group variation in behaviour, the adolescence-limited group were still exhibiting problem behaviour, albeit less serious behaviour than the life-course persistent group. Similar patterns have emerged in trajectory analyses with other samples (for example, Nagin, et al., 1995). Thus, the severity and patterning of

antisocial behaviour retains rank stability even across distinctive trajectory groups (Huesmann & Moise, 1998; Loeber & Hay, 1997).

The current results suggest that there was an analogous ‘rank order’ in the promotive effects of university study for former bullies. Persistent bullies were the most troubled group during the school years, and also most likely to be aggressive young adults, but only if they were in an employment-oriented role. Adolescent-onset bullies were more troubled than non-bullies at Times 1 and 2, but generally not as badly off as the persistent group. Like the persistent bullies, they were at risk of adult aggression if they did not attend university, but the promotive effect was less pronounced than it was for the persistent bullies. It is also worth noting that even child-limited bullies who attended university reported less aggression than their employment-oriented counterparts, though this effect fell just short of significance. This ordering, however, did not apply to the negative effect of drinking, which was significant for the persistent bullies only.

To summarise, the present findings parallel some findings from the other key studies of problem behaviour in the transition to adulthood, and contrast with other findings (refer to the review in Chapter 2 and the following papers in particular: Aseltine Jr. & Gore, 1993; Hussong, et al., 2004; Loeber, et al., 2007; Moffitt, et al., 2002; Roche, et al., 2006; Roisman, et al., 2004; Stouthamer-Loeber, et al., 2004). However, the variation within this literature itself has been noted. Such variation is not particularly surprising given the different populations under study, the varied socio-economic and cultural settings, and the diversity of methodologies and behavioural measures.

Comparing similarities and differences in the predictive power of specific factors for specific subgroups between this study and others, however, is less important than considering what the findings suggest about the underlying developmental

processes that gave rise to such variations. I argue that the findings of the present study illustrate specific instances of several more general developmental mechanisms that apply to explanations of continuity and change in a wide range of adaptive and maladaptive behaviours across the life span. For instance, early experiences are strong predictors of later outcomes, but people's behaviour can change in relation to changes in the environment. A related point is that both proximal and distal predictors of behaviour are important, but their relative influence, or the way in which they interact, varies across individuals and developmental periods.

Perhaps most importantly, the findings highlight the ways in which normative life transitions can create opportunities for either discontinuity or continuity in functioning through the social and institutional changes that typically occur at these times. For youth who arrived at the transition burdened by a greater degree of prior risk, these changes can create opportunities for turning points in developmental patterns of school-years aggression.

So why did drinking and going to university (or not) have the effects that they did? Possible answers to these questions will be considered shortly. However, it is first necessary to acknowledge that it is not possible to be certain about the direction of causal effects, given that institution role status, drinking frequency and aggression were measured concurrently. For instance, the reference period for measurements of drinking frequency and physical aggression was the previous 12 months. The drinking variable assessed the habitual frequency of weekly drinking over the last year, while the physical aggression variable was designed to capture the number of specific violent events within the same period. Therefore, aggressive incidents may have occurred earlier or later in the year, at times when individuals were drinking frequently, or at times when they were drinking infrequently. Leaving school and entering study (or not) are more clearly defined events, which for many would have occurred more than 12 months

before the Time 3 assessment. The participants ranged in age from 18 to 22. The 18 and 19 year olds (24% of the sample) would probably have left school within the last 12 months. However, many young people do not commence study until some years after they finish high school, so some of the students aged 20+ might also have been very recent university entrants. Unfortunately, detailed information about the patterning of participants' work and study activities in the period since leaving school was not available. It is therefore possible that physical aggression decreased the likelihood of attending university and increased drinking frequency, rather than the reverse. For example, physically aggressive young adults might tend to associate with other troubled young people who also drink frequently.

Despite this limitation, the finding that the transition experiences were not broadly associated with lower or higher levels of physical aggression across the sample, but were specific to the persistent and adolescent-onset bully groups, suggests that they did have some effect on aggression, as these groups were aggressive prior to emerging adulthood. Moreover, while it was not possible to control for earlier *physical* aggression, studies of bullying show that the children who bully most frequently and for the longest periods of time are also most likely to be physically aggressive (Liang, et al., 2007; Pepler, et al., 2006). It is therefore seems likely that the persistent bullies had engaged in at least some acts of violence prior to the Time 3 measurement. The fact that persistent bullies who drank frequently and did not attend university were *more* likely to be physically aggressive in adulthood than other persistent bullies implies that these experiences had some impact on ongoing trajectories of violence. Finally prior aggression (bullying) did not predict either institutional role status or drinking frequency.

The effect of the Time 3 transition experiences on the bullying- aggression connection is only half the story. There has been debate in the literature about whether

the adult life events associated with desistance from offending amongst antisocial individuals can be predicted from earlier measures of childhood risk (Laub, et al., 1998; Moffitt, 2007; Sampson & Laub, 2005c). The analyses in Chapters 7 and 8 showed that the transition experiences *were* predictable from other measures of functioning during the school years. In the following sections I discuss longitudinal pathways to adult drinking and institutional role status and the implications of these relationships for the bullying – aggression connection. I aim first to consider how the specific predictors of Time 3 drinking/institutional role status relate to findings from other research predicting adult drinking and occupational outcomes from measures of functioning during childhood and adolescence. I then discuss the implications of the mediated longitudinal relationships that led to the transition experiences for the moderating effects of these experiences for persistent and adolescent-onset bullies at Time 3.

Drinking

Child and adolescent predictors of emerging adult drinking

The key predictor of early adulthood drinking in Chapter 7, apart from sex, was adaptive shame acknowledgement during high school. Adolescents who were better able to manage shame in a socially functional way following a transgression—admitting to feelings of shame, feeling a desire to make amends, feeling bad about their behaviour—drank less frequently as young adults than adolescents who were less able to regulate shame in this way.

There is more than one way to explain the association between better management of shame in high school and less frequent drinking in early adulthood. One option is to focus on shame acknowledgement as one aspect of an overall ability to regulate self, behaviour, and emotions. Although findings in the literature vary depending on the alcohol outcome assessed (for example, binge drinking, alcohol use,

frequency of drinking, clinical diagnosis of alcohol use disorder) aspects of poor self-regulation during adolescence are frequently shown to predict difficulties with alcohol in adulthood (Hawkins, et al., 1992; Klinteberg, et al., 1993). Longitudinal studies that include specific measures of emotion regulation suggest that markers of emotional dysregulation like undercontrol of anger are associated with greater alcohol use in adulthood (Kokkonen & Kinnunen, 2006). In the Finnish Jyväskylä Longitudinal study (JYLS), for instance, a connection between early adolescent undercontrol of negative emotions and heavy drinking in adulthood has been repeatedly demonstrated (Kokkonen, et al., 2002; Pulkkinen, 1995).

The assumed mechanism underlying the link between regulatory deficits and drinking is that individuals who are less able to control their behavioural responses will be less able to control their drinking behaviour. Social information processing research suggests that difficulties regulating behavioural and emotional responses tend to inhibit reflective and considered decision making in social situations. As shame acknowledgement is an aspect of emotion regulation, it is certainly plausible that below-average skills in this regard in high school could characterise individuals less able to engage in rational decision-making with regard to frequency of drinking in adulthood.

However, this ‘rational’ explanation is not entirely satisfactory. While emotion regulation measures do predict adult alcohol use outcomes, they are rarely shown to do so in isolation from behavioural factors. In a nutshell, the regulatory pathway to adult drinking problems in the wider literature is most consistently characterised by behavioural rather than emotional undercontrol, described in different studies as including externalising behaviour/symptomatology, aggressiveness, antisocial behaviour, delinquency, unconventionality, impulsivity, and sensation seeking. (Dubow, et al., 2008; Pardini, White, & Stouthamer-Loeber, 2007). In the JYLS, for

instance, the construct termed ‘low self-control of emotions’ in childhood and adolescence subsumed measures of aggression, such as attacking peers without reason, alongside emotion-related measures like lack of concentration and moodiness (Kokkonen, et al., 2002). In summarising a number of longitudinal studies, Zucker (2008) argues that these predictors are all characterised by ‘the inability or unwillingness or failure to inhibit behavioural impulses even in the face of negative consequences’ (p. 101).

I argue that it is shame *displacement*, rather than shame acknowledgement, that aligns more closely with this description of behavioural undercontrol. The shame management measures are based on children’s responses to being discovered in a hypothetical act of wrongdoing at school (bullying another student) by an authority figure in the form of a teacher. Acknowledgement responses are of a reconciliatory nature, including feelings of self-blame, distress, and acceptance of wrongdoing. Displacement responses, in contrast, are of an externalising nature, including expressing anger, retaliation, and denial of wrongdoing. However, displacement did not predict adult drinking after controlling for shame acknowledgement. Although this is inconsistent with positive relationships between externalising behaviour/undercontrol reported in the wider literature, it is also true that the findings in this literature vary greatly depending on both the externalising predictor and the alcohol use outcome. As a more traditional measure of behavioural undercontrol, impulsivity, also failed to predict adult drinking in the present study, it may be that the specific drinking outcome used (frequency) was simply not strongly related to earlier externalising behaviour. Another possibility, supported in the literature, is the presence of an indirect pathway from adolescent displacement to adult drinking via early onset of drinking during adolescence (Zucker, 2008). The absence of Time 2 drinking data, however, leaves this question unanswered.

The above discussion is not intended to suggest that shame acknowledgement does *not* reflect some broader self-regulatory construct, nor that emerging adult drinking was unrelated to self-regulatory skills. Rather, I argue that clues as to the most likely mechanisms by which acknowledgement skills in adolescence predicted less frequent emerging adult drinking are to be found in its relationship to positive school adjustment. Chapter 7 showed that adolescent shame acknowledgement was the outcome of a set of reciprocal relationships between shame management and school adjustment over the primary school–high school transition. I described these linkages as a *socio-emotional* pathway, in which continuity in shame acknowledgement was facilitated by continuing positive perceptions of the school setting over the primary school- high school transition. Children who liked school at Time 1 were also better able to acknowledge shame; both these factors appeared to enable these children to subsequently establish a positive emotional connection to high school and continue to manage shame adaptively. Thus, level of shame acknowledgement in high school may be an indicator of the degree to which an adolescent either ‘fits’ or is ‘at odds’ with the conventional normative standards of the school environment. Consistent with Eccles and colleagues’ research into stage-environment fit during adolescence (1996; Roeser, et al., 1998), successful transitions to high school (in terms of positive emotional functioning) were facilitated by both good adjustment to primary school and past emotional functioning.

These relationships with school adjustment suggest that the measure of shame acknowledgement aligns with what Zucker (2008) terms a ‘social competence/incompetence’ pathway to drinking problems. This is a complex construct, and different researchers focus on different sets of predictors. However, many salient features relate to the quality of the relationship between children/adolescents and the school environment, indicated by measures of school bonding and identification, as well as academic achievement and motivation.

Many developmental studies have established links between positive school functioning in adolescence and trajectories of alcohol use during the school years (for example, between grades 10 and 12). Poor school bonding, academic failure, low motivation, and general disengagement from school are associated with a wide range of problem behaviours during adolescence, particularly alcohol and substance use (Bond, et al., 2007; Bryant & Zimmerman, 2002; Voelkl & Frone, 2000). The role of school bonding has been closely examined by researchers within the Social Development Research Group (Hawkins, et al., 2003). According to the Social Development Model, factors such as a sense of belonging and emotional commitment to the school environment are representative of a prosocial bond with this institutional setting. This bond means that students will increasingly come to value the prosocial norms of the school as their own, and this 'stake' in conformity will inhibit behaviours like substance use that deviate from such standards. As described in Chapter 3, these are the contextual conditions that are predicted by Ahmed (2001) to facilitate adaptive shame management, and the present study confirmed earlier Life at School findings by demonstrating the relationship between school adjustment and shame acknowledgement.

The Time 3 findings seem to indicate that the relationship between shame acknowledgement and positive school adjustment was protective in terms of adult drinking. This is consistent with evidence in the developmental literature showing that these factors can protect against alcohol abuse during adulthood (Guo, et al., 2001; Pitkänen, 2008 #1033; Oesterle, Hill, Hawkins, & Abbott, 2008). However, the weight of evidence strongly suggests that the mechanisms of protection most likely operated via a range of unmeasured intervening variables in later adolescence and young adulthood itself. One obvious example is level of drinking during adolescence. Adolescents who are poorly connected to school in early adolescence tend to begin

drinking younger and drink more in late adolescence (Hawkins, et al., 1997). Thus, earlier school measures exert their influence on adult drinking via continuity of drinking during adolescence (Schulenberg, Bachman, O'Malley, & Johnston, 1994).

Another important mediating mechanism involves peer group experiences. As Schulenberg and colleagues point out (2001), drinking is developmentally normative in emerging adulthood, as well as legal. The decisions facing many young adults therefore relate to when, where, with whom, and how much (more) to drink, rather than whether to drink or not. As drinking is an important social activity during this life phase, these decisions would be influenced by the behaviour of others in an individuals' peer group. Peers become increasingly important as sources of social influence as children move into adolescence. Findings from the SSDP show that adolescents who find little opportunity to form bonds with prosocial others in the school environment are more likely to form attachments to peers who engage in antisocial and problem behaviours, such as drinking and substance use (Catalano, Haggerty, et al., 2004; Lonczak, et al., 2001). There is substantial evidence linking association with drinking peers to alcohol use in adolescence and adulthood (Hawkins, et al., 1992). Moreover, adolescents who associate with drinking peers during high school are likely to continue to select peer contexts involving drinking during early adulthood (Bachman, et al., 2002).

In sum, these findings suggest that shame acknowledgement predicted adult drinking because it was one aspect of a process that may have increased the likelihood that adolescents would initiate drinking earlier (during high school), associate with friends who also drank, drink more often in senior high school, and continue to select themselves into peer groups and social settings involving drinking in early adulthood. Unfortunately, the lack of adolescent measures of drinking and information about peer-groups affiliations means that specific mechanisms cannot be identified. Despite these

limitations, the results nonetheless show that high shame acknowledgement and positive school adjustment were features of a pathway of lesser risk in terms of adult drinking.

Implications of the drinking moderation effect for the relationship between school bullying and adult aggression

What are the implications of the socio-emotional pathway for the bullying-aggression connection? The descriptive analyses in Chapter 7 suggested that similar socio-emotional variables were associated with early adult drinking for the majority of the sample. That is, poor school adjustment and low shame acknowledgement in particular during school increased drinking in adulthood for bullies as well as non-bullies. However, the moderation effect means that it was only in combination with persistent bullying that these earlier risk factors translated into physical aggression via drinking. When persistent bullying was *not* present (the non-bullies, child-limited bullies and adolescent-onset bullies), the poor school adjustment/low shame acknowledgement constellation did not lead people to become very aggressive young adults, even if they were drinking very frequently.

Due to the lack of contextual information surrounding the measure of aggression, the exact mechanisms by which drinking increased adult aggression amongst persistent bullies must remain unclear. There are at least two possibilities. The first is that frequent drinking was associated with aggression for persistent bullies because it was a marker of ongoing difficulties with problem behaviour generally. For example, persistent bullies probably started drinking earlier than other study members, drank more heavily during high school (when drinking was a deviant rather than legal behaviour), and associated with similarly deviant peers, all of which would increase the likelihood of both drinking *and* aggression in early adulthood. The second possibility is that drinking exerted some proximal effects on aggression above and beyond these

earlier experiences, actively exacerbating persistent bullies' aggressive tendencies. As discussed in Chapter 2, alcohol has been shown to have detrimental effects on cognitive functioning and decision-making (Bushman, 1997), and the social and physical features of emerging adult drinking settings may act to trigger aggression as well as escalate minor incidents into violence (Graham & Homel, 2008). Hussong and colleagues' analysis of joint trajectories of drinking and aggression from adolescence to adulthood amongst Dunedin study males supported both hypotheses: participants who drank more at 18 were more antisocial at 21 and 26, but at times when young men reported using more alcohol, they also reported more antisocial behaviour than would be predicted based on their past patterns of antisocial behaviour. It is possible that the effects of frequent drinking for persistent bullies in the present study are a product of both these mechanisms, but which of these was more important is a matter for future study.

Whatever the mechanisms of the relationship between drinking and aggression, the present findings highlight the developmental significance of the transition to high school for early adult outcomes. Continuity in socio-emotional functioning over this transition had both short- and long-term consequences. In the short-term, reciprocal relationships between positive perceptions of the school context and adaptive shame management between Times 1 and 2 were associated with lower levels of bullying during high school, and in the long-term, with less frequent emerging adult drinking. However, the overall beneficial consequences of even slightly more positive school-years functioning for disrupting the continuity of aggression were greatest for the *most* troubled group of bullies. All the persistent bullies reported significantly worse socio-emotional functioning than members of the other three bully groups, even those who drank less frequently in adulthood. However, the slightly better adjustment enjoyed by these individuals during adolescence, relative to other members of the persistent bully group, reaped disproportionately large benefits in adulthood.

The final question asked the extent to which the mediated socio-emotional pathway to drinking via aggression was the same across the four bully trajectory groups. The moderation effect makes it clear that the *final* link in the pathway was different for persistent bullies, because drinking only increased aggression for this group. What remains unknown is whether earlier links in the socio-emotional pathway culminating in drinking also differed across bully trajectory groups. For instance, it might be possible that the reciprocal relationships between school adjustment and shame acknowledgement across the primary school to high school transition were stronger in some bully groups than others. As discussed in Chapter 7, it was beyond the scope of the present study to conduct tests of moderated mediation, which would assess whether the indirect effects of Time 1 and Time 2 variables in the drinking path model (Figure 7.3) were conditional upon level of bully trajectory group. To address this problem, I therefore used descriptive statistics to visually compare the strength of association between direct and indirect predictors of drinking (including Times 1 and 2 shame acknowledgement, school connectedness, and sex) and frequent vs. infrequent drinking within each bully trajectory group (Figure 7.4). While this does not provide a test of conditional indirect effects, it nonetheless provides clues as to ways in which pathways might differ.

This descriptive analysis showed that emerging adult drinking frequency was associated with positive school adjustment and adaptive shame acknowledgement across the majority of the sample. For adolescent-onset bullies, however, these factors largely failed to differentiate between high and low frequency drinkers. It is possible that socio-emotional factors were more closely linked to these participants' behavioural difficulties in adolescence, rather than their adult drinking. It was beyond the scope of this study to more closely examine what distal factors *did* predict adult drinking for this group. This is nevertheless an important topic for future research, given conflicting

findings in the literature surrounding both predictors of adolescent-onset problem behaviour, as well as factors associated with adult outcomes and desistance for this group (Moffitt, 2007; Roisman, et al., 2004). For instance, although drinking was not associated with aggression for these bullies, it would be interesting to examine whether they were experiencing other drinking-related problems in adulthood.

A final issue concerns sex differences. Sex exerted an influence at nearly every point in the socio-emotional pathway to emerging adult drinking. Not only were females better adjusted to school and better able to acknowledge shame at Time 2, they drank less at Time 3 regardless of earlier adjustment. The lower level of adult drinking for females is a long-standing finding in the alcohol-use literature (Bushman, 1997). More debate has surrounded the issue of whether the predictors of drinking also vary across genders. Though results differ greatly depending on variables examined, most studies suggest that the development of drinking involves traits and mechanisms that are mostly non-gender-specific, but that longitudinal relationships are in general stronger for males than for females (Zucker, 2008). A major limitation of the present study is that, due to sample size, analyses could not be conducted separately for males and females. It may be that socio-emotional variables did not predict drinking in the same way for males and females. As suggested by the alcohol use literature, it is also possible that drinking was not associated with aggression for female participants, casting doubt on the overall applicability of the moderation analyses in Chapter 6. These are important issues for future research.

Institutional role status

Child and adolescent predictors of emerging adult institutional role status

Children who had participated in university by the Time 3 assessment were shown in Chapter 8 to be more likely to be female, more likely to have a university

educated parent (usually mother), were less impulsive in childhood and reported fewer academic difficulties in adolescence. Adolescent academic functioning also had a mediating role in the prediction of early adult university participation: controlling for academic difficulties in primary school, better academic functioning in high school was predicted by more liking for school in primary school and greater parental education. In Chapter 8 I described these variables as representing different aspects of a ‘capital’ pathway to emerging adult institutional role status. Parental education, sex, liking for school and academic difficulties are sociodemographic and acquired *social capital* resources that limit or facilitate access to educational and occupational opportunities at different points in the life-span, while impulsivity is an aspect of *personal capital* that may interfere with the acquisition of other social and economic resources.

The social capital components of the pathway agree with long-standing findings in a range of disciplines demonstrating that educational and occupational choices are constrained by sociodemographic factors. For instance, the transmission of educational prestige across generations is one of the most consistent findings in the social sciences. Studies show that even when other factors such as academic achievement, IQ, and other indicators of socio-economic status are controlled, parental education remains a robust predictor of children’s adult educational attainment. This direct effect is consistent across study samples and historical periods (Bond, et al., 2007; Guldi, Page, & Stevens, 2007; Haveman & Wolfe, 1995; Sanford, et al., 1994; Sirin, 2005). The relationship between greater parental education and fewer academic difficulties in adolescence reflects other findings in the developmental literature indicating that parental education also leads indirectly to children’s attainment because it is associated with the acquisition of academic resources during the school years. For instance, greater parental education leads to more parental involvement in children’s education, stronger school attachment, higher grades, and more optimistic educational aspirations in year 12 (Dubow, Boxer, &

Huesmann, 2009; Magnusson, 2007; Pettit, Yu, Dodge, & Bates, 2009). Thus, the advantage or disadvantage of parental education level is transferred by proximal processes at each stage of development.

However, parental education was not the only important contributor to children's outcomes. The model in Chapter 8 also highlighted the long-term consequences of childhood impulsivity for adult attainment. Independent of other measures of functioning and school adjustment, children who were more impulsive in primary school were less likely to have participated in university ten years later. Developmental research has long documented the pervasive impact of early measures of poor impulse control (e.g., hyperactivity, inattention, temper tantrums, risk-taking) for many different problem behaviours in adolescence and early adulthood (White, et al., 1994). However, poor impulse control also predicts 'downward mobility' in adulthood, such as increased likelihood of unemployment and unstable employment, low educational attainment, and lower occupational status. Most studies show that impulsivity is associated with adult occupational outcomes because it sets in motion cascading sets of experiences during childhood and adolescence that culminate in greater social disadvantage by early adulthood. For example, impulsivity may interfere with children's success at school, perhaps because these children have difficulty concentrating in the classroom or relate poorly to teachers. This can lead to failure in later grades, early school dropout, and lack of educational prospects in late adolescence (Caspi, et al., 1987; Moffitt, 1993).

In this study, impulsivity did not predict greater academic difficulties in high school after controlling for Time 1 measures of academic difficulties. However, the research findings noted strongly suggest that there were probably other, unmeasured variables between mid- and late- adolescence that mediated the relationship between childhood impulsivity and emerging adult university participation. For instance,

childhood behavioural undercontrol has been shown to predict lower adult attainment by increasing adolescent delinquency, which tends to truncate post-secondary educational options (Caspi, et al., 1998; Fergusson & Horwood, 1998). It seems likely that such mediating processes would have been more apparent had other measures of adolescent problem behaviour like drinking, association with delinquent peers and school truancy, been available.

The final element in the constellation of social and personal capital predictors is gender. Though historically boys have been more likely than girls to proceed to higher education, the trend has been reversed in Australia in recent years (Australian Bureau of Statistics, 1998). This phenomenon has attracted heated public debate. Some educational researchers suggest that the way in which high school education is delivered caters better to the developmental needs of girls than boys (Collins, Kenway, & McLeod, 2000; Jacob, 2002). Certainly in this study girls reported more liking for school in primary school and stronger school connectedness in high school, though there did not appear to be gender differences in academic difficulties. Thus, it is possible that non-academic aspects of the school environment might for some reason have better enabled girls to turn their academic abilities into opportunities for higher education.

Implications of the institutional role moderating effect for the relationship between school bullying and adult aggression

The moderation analyses in Chapter 6 showed that the beneficial effects of parental education and good impulse control were not limited to academic functioning in high school and higher education participation, but also had positive implications for emerging adult aggression. However, these effects only became apparent under conditions of prior behavioural risk: adolescent-onset and persistent bullies were less

likely to be aggressive if they went to university, but for those who never bullied or whose bullying was limited to childhood, *not* participating in university posed no risk for their adult aggressive behaviour. What might underlie the ‘turning point’ effect of university participation for persistent and adolescent-onset bullies? As noted in Chapter 2, the longitudinal offending literature has paid more attention to the positive effects of stable employment on trajectories of offending than it has to the effects of study, especially university study. However, a problem with this research is that turning point theories were formulated based on samples who transitioned to adulthood between 25 and 40 years ago (eg., Sampson & Laub, 1993). Since that time, economic and social changes have altered the significance of both work and university study for young people’s progress towards adulthood.

A wider range of contemporary employment- and study-related transitional events have been considered by researchers working on other aspects of human development, particularly in fields such as mental and physical health, stress, substance use, and social role functioning. Developmental functions of university study have also received specific attention within the theory of emerging adulthood. Findings naturally vary across these diverse areas of investigation, but the evidence generally supports the conclusion that different sorts of post-high school institutional transitions have different effects on trajectories of emerging adult functioning, with some providing ‘turning point’ opportunities for those who were experiencing difficulties at earlier stages of development. This implies that, regardless of the specific transitional event or outcome of interest, the underlying causal mechanisms will be consistent with developmental processes of continuity and change at major life transitions. Following this line of reasoning suggests that the best way of working out what could be going on ‘inside the green box’ (in Figure 8.3) for former bullies is to map what is known about the general developmental mechanisms underlying turning points effects onto what is known about

the employment and study contexts of 21st century emerging adulthood. What sorts of experiences associated with employment and university settings could be beneficial or risky for former bullies? Rutter (2006) lists several mechanisms that can give rise to turning point effects. I discuss four of these that seem particularly relevant to the present findings: (a) a clear separation from past environments, (b) increases in informal social control, (c) opportunities for identity formation, and (d) opportunities to form supportive new relationships.

A clear separation from past environments

All participants experienced some break with past contexts simply by leaving school: the transition out of formal schooling is one of the most pronounced institutional changes in the 12 years since children enter first grade. Discontinuity in school context after the age of 18, however, does not necessarily imply discontinuity in other contexts. The university-oriented participants transitioned into an institutional context that would have been almost completely novel. In contrast, most study members probably had some experience of the workplace prior to leaving school. About 50-60% of Australian students have a part-time job during years 11 or 12 (Marks, et al., 2000). In the past 20 years, a number of studies have shown that part-time work in high school, especially intensive work, is associated with higher rates of problem behaviour, including interpersonal aggression and substance use (Bachman & Schulenberg, 1993; Mortimer, Finch, Ryu, Shanahan, & Call, 1996; Steinberg, Fegley, & Dornbusch, 1993). Furthermore, high school students who work are somewhat less likely to participate in higher education than those who do not. Finally, employment choices for young people with no post-school qualifications largely continue to be limited to the sorts of jobs held by high school students: low status, short-term and casual positions that are unlikely to be starting points for long-term careers (Australian Bureau of

Statistics, 2004, 2005b; White & Wyn, 2004). The uncertain and low-status nature of these jobs could be a significant source of stress for young adults who rely on them as their main source of income. Aseltine and Gore (Aseltine Jr. & Gore, 2005) also suggest that young workers may be more likely than mature adults to accept negative features of workplaces, like high rates of interpersonal conflict and lack of autonomy, that are known to have adverse impacts on mental health.

Thus, it is possible that even though school had been left behind, an employment orientation in emerging adulthood involved some degree of continuity in context. To the extent that workplace contexts had negative impacts on problem behaviour in adolescence, or were stressful during emerging adulthood, those who were experiencing prior difficulties might find themselves even more embedded in these problematic environments. School bullies, perhaps accustomed to striking out impulsively in response to interpersonal conflict, might find in the work environment continued opportunities to do so. By contrast, although 90% of the university-oriented participants had a job, their main vocational focus was the acquisition of qualifications for eventual higher-status careers. Thus, university may have provided former bullies with some 'buffering' from difficulties associated with the workplace.

University students may also have experienced clearer separations from past peer contexts. Although the participants in this study largely remained Canberra-based, the university setting nonetheless throws new entrants in with a broad range of young people from interstate and overseas, probably with developmental backgrounds characterised by positive school adjustment and low levels of problem behaviour. Therefore, persistent and adolescent-onset bullies who went to university may have been presented with a sudden increase in possibilities to form relationships with prosocial others, and make a break with past problematic peer contexts.

It is of course highly likely that the university setting also brought increased opportunities for partying and drinking. Although there were no differences in frequency of drinking between the two institutional role groups, it is not known how these groups differed in their earlier drinking. Nonetheless, drinking did not account for the higher levels of aggression amongst bullies who did not go to university (i.e., there was no three-way interaction between bully trajectory group, institutional role, and drinking). White and colleagues (2005) analysed changes in substance use and related problems between 18 and 21 for US youth who went to college and youth who did not go to college after high school. The transition out of high school was associated with increased levels of alcohol use for *all* youth, but there were no differences in levels of use between college students and non-college students at age 21. Non-college youth, however, reported more negative consequences of alcohol use. For instance, they were significantly more likely to get into trouble with the police for things they did under the influence of alcohol, and these group differences persisted to age 30. The authors suggested that college youth had the social capital to ‘make it through emerging adulthood unscathed’ even if they did drink at high levels. It is possible that the employment-oriented bullies in this study were more likely to be aggressive when drinking even though they did not drink any more often than their university-oriented counterparts. Whether this would result from continuities in context, developmental history, or other individual characteristics is unknown.

Informal social control

All emerging adults, regardless of work and study transitions, experience a significant decrease in social control upon leaving school. They also attain legal majority, the degree of control that parents exert over everyday activities declines, and the conventional ties of marriage and parenthood are for most some years in the future.

The resulting degree of personal freedom is a defining feature of emerging adulthood. What sources of social control *do* emerging adults have? In the desistance literature, informal social control is often shown to function via conventional ties formed in stable employment. However, the labour market changes in past decades mean that full-time, stable employment may not be a realistic option for many 21st century young people before the age of 25. Even those who work full-time hours are likely to do so under casual or short-term employment conditions, or combine several casual jobs. Such jobs are unlikely to be viewed by emerging adults as long-term adult commitments. If work environments are stressful or conflicted, it is uncertain whether workplace relationships will be salient sources of positive social control for troubled adolescents in these years of personal freedom.

Opportunities for identity formation

Much of the research on the developmental significance of employment and study in emerging adulthood has focused on issues of identity formation. Following Erikson, theorists argue that one of the key developmental tasks of emerging adulthood is the resolution of the identity crisis and the formation of a stable sense of one's adult self (Côté, 2006). It is further argued that this process is facilitated by the availability of an institutional moratorium, or opportunity to take 'time out' and explore different identities in structured and supportive contexts. The institutional context most commonly associated with emerging adulthood is the university. Moreover, university provides a socially sanctioned setting that is ideal for exploration: of different future possible selves, and of different lifestyles, values and political viewpoints. This suggests that university is an environment that is particularly well-suited to support the developmental needs of emerging adults as they establish their adult lives. To the extent that a sense of adult identity is related to lower levels of problem behaviour (Catalano,

Berglund, Ryan, Lonczak, & Hawkins; Lerner, Dowling, & Anderson, 2003), university might present former bullies with unique opportunities to ‘mature out’ of their previous behavioural difficulties.

However, it should not be assumed that university is the *only* setting that could provide opportunities for such positive psychosocial development during emerging adulthood. Gore, Aseltine and colleagues (Aseltine Jr. & Gore; 1997) examined changes in mental health and adaptation from high school until 1 to 2 years post-high school for college-bound and non-college bound youth in the US. They found that increases in mastery and quality of life, and decreases in depressed mood, were significantly greater for young people who made transitions to full-time college or full-time work, compared with those who worked part-time. The authors argued that what is most important for emerging adults is having full-time access to experiences and circumstances that promote a broader existential and developmental sense of striving towards maturity. In the present study the higher levels of aggression amongst employment-oriented bullies was not explained by part- or full-time work status. Nonetheless, on the basis of research findings regarding work, study and emerging adult adaptation (Arnett, 2006a; Luyckx, Schwartz, Goossens, & Pollock, 2008; Tanner, 2006), I tentatively argue that the sorts of jobs that are available to unqualified and less socially advantaged bullies after high school are not likely to provide conditions to promote positive psychosocial development.

Chances to form new supportive relationships

The possible role of peer group mechanisms has already been mentioned. Post-high school transitions into different work and study environments also bring youth into new relationships with a wide range of older, mature adults. A particular function of relationships between younger and older adults in employment and educational contexts

is the imparting of specific knowledge, skills and values that are needed to enable youth to move forward and become the future experts in these settings. In the university context, older adults are likely to include learned individuals in teaching roles. These individuals may provide young adult students with far more than the opportunity to obtain specific professional and academic knowledge. Labouvie-Vief (2006) argues that the presence of many 'mature thinkers' in the university setting scaffolds the development of new and advanced forms of cognition in emerging adults. These forms include increased capacities for reflective emotional cognition, complex moral reasoning, and an ability to think beyond the conventional in the critical evaluation of different viewpoints and cultural norms. However, Labouvie-Vief contends that these forms of thinking only become functional under high-support conditions. In university settings, mature adults convey complex knowledge to young adults in a highly organised fashion. These 'skilled knowers' help emerging adult 'novices' break down the components of new cognitive skills, and provide ongoing guidance as they master them. Such structured and supported acquisition of reflective thinking skills could be very beneficial for emerging adults who were aggressive during the school years, perhaps promoting reductions in aggression. The less organised employment-oriented route to adulthood, on the other hand, may not provide the same institutionalised structures to support the acquisition of complex new thinking skills. This transfers the responsibility for discovering such supports to young people themselves, a challenging task for those just reaching maturity. For those disadvantaged by past impulsivity, less socio-economic capital, and school difficulties, it will be more challenging still.

The above discussion is somewhat speculative, and study limitations suggest possible alternative explanations for the effects of institutional role status. First, the absence of information about overall adjustment in years 11 and 12 means that the moderating effects of university/employment may be only markers of processes already

well underway before these young people finished school. For example, it is entirely possible that bullies who went to university did so because something ‘went right’ during the final two years of secondary school. As noted in Chapter 4, ACT students attend high school up to year 10, when the Time 2 data were collected. If a student proceeds to the two final years of secondary schooling, he or she will attend a secondary ‘college’ located on a physically separate campus. Amongst other features, colleges offer students flexible class timetabling, the opportunity to undertake accredited vocational training or units of tertiary study; and, in contrast to most high schools in other states, do not require uniforms to be worn. This move to a more adult atmosphere represents quite a significant institutional transition that may, for some students, have resulted in markedly improved person-environment fit. Some persistent bullies may have been lucky enough to encounter a supportive or inspiring teacher, or develop relationships with more prosocial peers.

Secondly, the selective attrition of male participants who had less educated parents and experienced more academic difficulties at Time 1 probably led to an overrepresentation of better functioning and socially advantaged young people in the persistent and adolescent-onset bully groups, and these young people always had a greater likelihood of going to university despite their behavioural difficulties. However, since gender and parental education were amongst the most important predictors of institutional role status, the estimate of the salutary effect of university participation for former bullies may err on the conservative side because individuals who dropped out of the study were less likely to have attended university by Time 3.

Another issue is the consistency of the mediated ‘capital’ pathway to institutional role status across bully trajectory groups. As discussed earlier with regard to drinking, the moderation effect shows that the final link in the pathway, from institutional role status to aggression, was significant only for persistent and adolescent-

onset bullies. However, the results do not reveal whether indirect effects with their genesis earlier in the pathway also differed across bully trajectory groups. Following the same procedure as the drinking model, descriptive analyses in Chapter 8 were designed to assess the strength of relationships between direct and indirect predictors or institutional role status (including parent education, impulsivity, sex, liking for school and academic difficulties) and employment vs. university-oriented role within each bully trajectory group (Figure 8.4). These analyses showed that the variables that predicted university participation at the sample level reliably distinguished between university-oriented and employment-oriented participants in the non-bully, child-limited bully, and persistent bully groups. That is, compared with others in their bully subgroup, university-oriented participants in each of these groups had more educated parents, were more likely to be female, were less impulsive as children, and so on. As was apparent in the drinking analyses, however, these patterns did not characterise the adolescent-onset bullies so consistently. Non-university bound adolescent-onset bullies were more impulsive in childhood, but mean scores on academic difficulties and liking for school failed to clearly distinguish between adolescent-onset bullies who participated in university and those who did not. On the other hand, parental education demonstrated a 100% ‘hit rate’: *all* the adolescent-onset bullies with university-educated parents went to university.

One possible explanation is that the ‘early in life’ constraints of socio-economic disadvantage and behavioural undercontrol are more salient predictors of adult educational outcome than academic factors for children whose difficulties begin or increase during high school. However, it is also worth noting the distribution of parental education across the four bully groups. Surprisingly, the splits in the never bully, child-limited, and persistent bully groups were almost identical: slightly less than half the parents of these children had been to university. Only five of the parents of adolescent-

onset bullies (21% of this group), however, had been to university (Table 5.2). Since parental education predicted Time 2 academic difficulties, the lack of within-group differences on this measure might reflect the low proportion of university-educated parents in the adolescent-onset group. It is also possible that less parental education might be associated with increased bullying in high school, which would be consistent with some findings from bullying research as well as the broader antisocial behaviour literature illustrating connections between socio-economic status and aggression. In this case, however, it would be logical to expect a similarly low or lower level of parental education in the persistent bully group as well. Given the selective attrition discussed, it may be that the patterns observed in the adolescent-onset group are closer to what would be apparent for the persistent group had a more representative sample been retained to Time 3.

These limitations notwithstanding, the beneficial effects of university study for former bullies remains. Whatever the actual mechanisms, the behavioural benefit of university participation was greatest for those who had more to gain. However, the mediation analyses showed that, even amongst bullies, the chances of encountering turning points associated with education were constrained by socio-economic status years before the start of high school. The drinking model discussed earlier emphasised the importance of the socio-emotional functioning over the primary school–high school transition for early adult behaviour; these current findings are a reminder of the pervasive impact of socio-economic status and childhood impulsivity for pathways to aggression throughout life. It seems likely that the negative consequences of low parental education and impulsivity for school functioning and behaviour accumulated such that each institutional transition put those with the least social and personal resources at an even greater disadvantage.

University may be positive for young people's development because it is a single centre of responsibility for managing at least part of the complex transition to adulthood. For those who are not rich, or clever, or lucky, responsibility for managing the transition falls to an uncertain labour market and a diverse range of uncoordinated and sometimes conflicting vocational institutions. Addressing rates of university participation amongst those of lower socio-economic status is one obvious solution, and this issue is currently the focus of public debate in Australia. The present findings suggest that the benefits extend beyond tertiary qualifications into other areas of functioning. Yet, university does not define emerging adulthood. Not all emerging adults are academically gifted or want to go to university. Therefore, the structured supports and challenges available to university students can and should also be available to non-university bound young adults. In Australia and the US, youth researchers call for institutions that cater to the developmental needs, aspirations, and expectations of the full range of young people at the end of compulsory schooling (for example, Flanagan, 2006; Sweet, 2008; Tanner, 2006). Tanner, for instance, suggests one solution to the lack of scaffolding for non-university youth is the establishment of a strong mentoring relationship with a generative adult who can support and guide the young person towards vocational and social maturity. At present, however, the fiscal climate and government policies in this country do not encourage or reward the creation of such structures within the institutional contexts of emerging adulthood.

Integrating effects of drinking and institutional role: Future orientation?

Drinking and institutional role represent somewhat different features of emerging adulthood. Yet, the findings show that they were both important in disrupting pathways of aggression for persistent and adolescent-onset bullies. I have discussed

possible mechanisms underlying these effects, separately for each transition experience.

Might there be a developmental mechanism common to both effects?

Some clues may be found in the concept of future orientation. Factors such as having a sense of one's future self, possessing a high degree of planfulness, and a motivation towards future goals emerge consistently in the literature as characteristics of resilience among otherwise 'at risk' young people, who exhibit positive adaptation despite past adversity (Masten, et al., 2006). Such adaptive planfulness is to some extent predictable from past functioning. However, late adolescence and early adulthood is a time during which new cognitive capacities for complex decision-making and planning emerge (Labouvie-Vief, 2006; Steinberg & Cauffman, 1996). Moreover, the literature on transitions to adulthood suggests that the contextual changes that occur at this time offer some troubled young people unique opportunities to hasten this cognitive maturation, and shift their development in positive directions (Masten, et al., 2004; Rutter, 1996). For instance, age-normative increases in the cognitive capacity to plan for and consider the future has been put forward as one factor that promotes desistance from delinquency during early adulthood (Keating, 1990; Mulvey, et al., 2004).

From this perspective, it could be argued that the degree to which emerging institutional and social settings promote a sense of future orientation in young adults could be of enormous benefit, or risk, to those on aggressive trajectories. For instance, frequent drinking contributes to and reflects a lack of forward thinking and may exacerbate youthful tendencies to direct action. Young people who drink frequently are also likely to be doing so in the company of others who are similarly focused on 'the here and now'. Moreover, for some young people, excessive drinking will have negative social, health or legal consequences that will hamper future planning (Hussong, et al., 2004; White, et al., 2005).

The institutional settings of work and university study may also vary in the extent to which they promote or hinder life planning amongst aggressive youth. University students forego immediate financial rewards to embark on an institutionalised route to vocational independence, surrounded by other young adults also constructing their future selves. In this way, university may provide a degree of institutional scaffolding for young people as they plan their lives during and beyond emerging adulthood. Some high school graduates may be lucky enough to find work that provides similar opportunities for advancement and achievement. There is a high probability, however, that young non-students with no post-secondary qualifications will find themselves in low-status and short-term jobs with limited career potential. Such settings are less likely to provide the supports that young people need to plan beyond their adult selves.

Emerging adulthood is often described as a time of freedom and unstructured possibility. However, developmentalists emphasise that key developmental tasks of this period include the consolidation of relationships that will be carried into adulthood, and which lay the groundwork for future careers and family (Tanner, 2006). On the basis of the present findings, it could be argued that the degree to which experiences during the school years set people up to negotiate the transition into emerging adulthood will to some extent determine whether school bullies have the resources to take advantage of new opportunities that may promote a sense of planfulness and perhaps reverse trajectories of aggressive behaviour.

Conclusions

This investigation has shown that the early adult consequences of school bullying are not benign. Children who bully other students are at increased risk of being physically aggressive as young adults. Those at greatest risk are children who bully

persistently throughout primary school and high school, or who increase their aggression during early high school. On the other hand, the findings also showed that bullying did not inevitably doom children to a life of above-average aggression. Continuity in aggression depended, at least in part, upon experiences that occurred after the end of high school. For children troubled by past bullying, heavy drinking and not attending university in the immediate post-high school years were associated with continuing aggression. Conversely, bullying adolescents who limited their drinking or were fortunate enough to attend university engaged in violent acts no more frequently than their less aggressive age mates.

Thus, the forms that the transition into emerging adulthood took mattered for the relationship between bullying and aggression. So too, however, did interconnections between a rich constellation of other factors throughout children's development. Experiences at different developmental periods contributed both directly and indirectly to the adult outcome. Factors that appeared to be of no relevance to adult aggression were shown to be important because they affected other intervening variables. For instance, the socio-emotional pathway to drinking highlighted the critical importance of making a good transition to high school, both for children's adolescent functioning and their future behaviour. Not only were reciprocal relationships between positive school adjustment and adaptive shame management over Time 1 and Time 2 associated with less adolescent bullying, they were indirectly protective for adult aggression because they reduced the likelihood of frequent drinking at Time 3. The role of parental education illustrated the way in which a 'macro-level' indicator of social capital had long-term consequences for the minutiae of participants' interpersonal behaviour via educational attainment.

Overall, these findings suggest that research on bullying would benefit from a developmental systems perspective. While some researchers do take this approach (for

example, Pepler, et al., 2006; Schwartz, Dodge, Pettit, & Bates, 2000), many studies focus on documenting the correlates of bullying without considering how and why these factors relate to aggression. A great deal is now known about the individual, familial, school and peer factors that are correlated with bullying. What are now needed are soundly theorised, detailed analyses of the underlying developmental mechanisms of continuity and change. A systems framework provides the conceptual tools to ‘think outside the school box’ by looking at both the short-term and long-term consequences of relations in students’ wider developmental systems over time. One important example is an improved understanding of how, and for whom, academic, social and familial correlates of bullying maintain or exacerbate bullying in the transition to new school environments. The present findings suggest, for instance, that the transition from primary school to high school as a key intervention point. Improvements in functioning at this time could be beneficial not just for students’ behaviour during high school, but could have positive consequences for many aspects of their adult lives.

Several study limitations have been noted earlier in this chapter. To recap, first, the concurrent measurement of emerging adult aggression, drinking, and institutional role status means that the directions of effects at Time 3 remain ambiguous. In addition, a lack of adolescent measures of drinking and school adjustment in years 11 and 12 means that it is unclear whether the effects of post-high school drinking/university participation for former bullies are simply indicators of earlier changes in trajectories of functioning. It is highly likely that persistent bullies were already drinking in high school, and that bullies who went to university experienced positive changes in the transition to an ACT college after the Time 2 measurement. These processes may explain, or operate alongside, causal effects of adult transitions.

Taken together, these limitations mean that the present findings cannot answer the question of the extent to which positive and negative ‘turning point’ effects of the

transition experiences reflected ongoing changes in behaviour, or short-term state dependence. For instance, after controlling for bullying trajectories and adolescent drinking, would former bullies be aggressive only *at times when* they are drinking frequently during the early adult years, or would frequent drinking at some ‘critical period’ account for permanent alterations in trajectories of aggression throughout adulthood? Similarly, some research on desistance suggests that beneficial effects of ‘turning point’ positive life events for offenders are in fact time-specific: when individuals are in stable employment or in a state of marriage, their offending declines, but rises again when life circumstances change (Horney, et al., 1995; Uggen, 2000). Consistent with developmental systems theories, continuity and change are intertwined processes, and aggressive behaviour is therefore likely to respond throughout the life course to changing conditions and experiences. What would happen to the behaviour of young people as they move in and out of education, perhaps taking a year out to work, or return to full-time study from the workplace? These are exciting questions for future exploration. However, addressing them requires multiple-wave longitudinal data that permit time-varying effects to be investigated. Prospective studies of school bullying should therefore ‘look to the future’ and consider assessing school-years factors like drinking and delinquency that will become important as individuals move into adulthood.

The inadequate exploration of gender differences is another shortcoming in the present study. It seems quite likely that pathways to drinking (and possibly university participation) were different for males and females, raising questions about whether there might also have been gender differences in the moderating effects of the Time 3 transition experiences. Future research should examine gender differences more closely, and also consider other problematic outcomes of bullying that may be more salient than physical aggression for females (e.g. victimisation, depression, substance use).

Thirdly, the lack of Time 1 and Time 2 measures of violence means that the prediction of Time 3 physical aggression from school-years bullying cannot be interpreted as change in behaviour, but simply as a longitudinal association between two different measures of aggression. It would be interesting to examine bullying during emerging adulthood. Workplace bullying, for instance, seems a promising phenomenon to investigate. However, as demonstrated in the workplace bullying literature, the meaningful measurement of bullying across diverse contexts of adult employment is a challenging task (Cowie, Naylor, Rivers, Smith, & Pereira, 2002). Moreover, this field has largely concentrated on assessing victimisation rather than perpetration of bullying.

Several additional limitations should be noted. First, an important aspect of aggression that was ignored was victimisation. I decided not to include bullying victimisation at Times 1 and 2 and violent victimisation at Time 3 in order to keep the analyses manageable within the small sample size. This enabled me to explore processes underlying continuity in perpetration in greater detail. However, bullying studies consistently show that the children who bully the most are also victimised the most. These bully-victims are by far the most troubled children with regard to other measures of functioning and problem behaviour. Assessing the adult aggression outcomes of different profiles of bullies and bully-victims is an important issue, as these students may differ in other respects, and thus benefit from different intervention approaches. Another issue is the relationship between being a bully in school and being a victim of violence in early adulthood. This may be particularly significant for understanding the process by which women become victims of violent and controlling abuse in adult intimate relationships. In a cross-sectional Canadian study, Connolly and colleagues (2000), found that early adolescent boys and girls who bullied their peers were equally likely to be aggressive towards dating partners. They argued that these

adolescents had become accustomed to using aggression to assert power and control over others and these interactional patterns were transferred to emerging peer and dating relationships. Later in life, however, they suggested that women who were aggressive in relationships would increasingly find themselves the victim of dominant men.

Secondly, children were sampled at Time 1 from 32 different primary school across the ACT. This means that the data are clustered within these schools. Thus, it is likely that children's reports at Time 1 at least are not independent of those of other children in their school. This is of particular importance to measures of bullying and shame management that are strongly influenced by children's perceptions of the school context. This issue will be addressed in future analyses. A further concern is that the present sample was predominantly Anglo-Australian and relatively socially advantaged. Thus, the results may not generalise to less advantaged populations in other parts of the western world, or even to other Australian state educational systems. Moreover, apart from the measure of parental education, I focused exclusively on self-report data. Parent reports of some aspects of children's functioning at each wave are available in the broader dataset, and should be examined in future analyses. Finally, the investigation was limited to measures of functioning in the school environment. Many other contextual factors such as parenting, family conflict and peer relationships are associated with both school bullying and adult aggression. Future studies could consider whether these factors are mediators in the pathway from childhood bullying to adult aggression.

Overall, this study represents one of the few attempts to examine the longer-term consequences of school bullying in life-course developmental perspective, drawing attention to a very limited set of possible causal mechanisms and highlighting areas for further research. At a broader level, the findings suggest that understanding how and why and when positive change occurs for school bullies will be vital in identifying

developmental leverage points at which interventions will have the greatest chance of success. Such knowledge should assist those in education and government to direct financial and human resources to those who most need them at times when they are needed most.

REFERENCES

- Ahmed, E. (1999). *Shame management and bullying*. Unpublished PhD thesis, The Australian National University, Canberra.
- Ahmed, E. (2001). Shame management: Regulating bullying. In E. Ahmed, N. Harris, J. Braithwaite & V. Braithwaite (Eds.), *Shame management through reintegration* (pp. 211-311). Cambridge: Cambridge University Press.
- Ahmed, E. (2006). Understanding bullying from a shame management perspective: Findings from a three-year follow-up study. *Educational and Child Psychology*, 23, 26-40.
- Ahmed, E., & Braithwaite, V. (2004a). Bullying and victimization: Cause for concern for both families and schools. *Social Psychology of Education*, 7, 35-54.
- Ahmed, E., & Braithwaite, V. (2004b). "What, Me Ashamed?" Shame Management and School Bullying. *Journal of Research in Crime and Delinquency*, 41, 269-294.
- Almqvist, F., Ikäheimo, K., Kumpulainen, K., Tuompo-Johansson, E., Linna, S.-L., Puura, K., et al. (1999). Design and subjects of a Finnish epidemiological study on psychiatric disorders in childhood *European Child and Adolescent Psychiatry*, 1999, 3-6.
- American Psychiatric Association (2000). *Diagnostic and statistical manual of mental disorders : DSM-IV-TR* (4th ed.). Washington, DC: American Psychiatric Association.
- Andershed, H., Kerr, M., & Stattin, H. (2001). Bullying in school and violence on the streets: Are the same people involved? *Journal of Scandinavian Studies in Criminology and Crime Prevention*, 2, 31-49.
- Andersson, T., Mahoney, J. L., Wennberg, P., Kuehlhorn, E., & Magnusson, D. (1999). The co-occurrence of alcohol problems and criminality in the transition from adolescence to adulthood: A prospective longitudinal study on young men. *Studies on Crime and Crime Prevention*, 8, 169-188.
- Arbuckle, J. L. (2005). Amos 6.0: User's Guide. Spring House, PA, USA: Amos Development Corporation.
- Arnett, J. J. (1998). Learning to stand alone: The contemporary transition to adulthood. *Youth and Society*, 29, 295-315.
- Arnett, J. J. (2000). Emerging adulthood: A theory of development from the late teens through the twenties. *American Psychologist*, 55, 469-480.
- Arnett, J. J. (2004). *Emerging Adulthood: The Winding Road from the Late Teens through the Twenties*. New York: Oxford University Press.
- Arnett, J. J. (2006a). Emerging adulthood in Europe: A response to Bynner. *Journal of Youth Studies*, 9, 111-123.
- Arnett, J. J. (2006b). Emerging adulthood: Understanding the new way of coming of age. In J. J. Arnett & J. L. Tanner (Eds.), *Emerging adults in America: Coming of age in the 21st century* (pp. 3-19). Washington, DC: American Psychological Association.
- Aseltine Jr., R. H., & Gore, S. (1993). Mental health and social adaptation following the transition from high school. *Journal of Research on Adolescence*, 3, 247-270.
- Aseltine Jr., R. H., & Gore, S. (2005). Work, postsecondary education, and psychosocial functioning following the transition from high school. *Journal of Adolescent Research*, 20, 615-638.
- Austin, S., & Joseph, S. (1996). Assessment of bully/victim problems in 8 to 11 year olds. *British Journal of Educational Psychology*, 66, 447-456.

- Australian Bureau of Statistics (1997). *1996 Census of Population and Housing*. Canberra: ABS.
- Australian Bureau of Statistics (1998). Educational Attainment: Gender differences in educational achievement, *Australian Social Trends 1998*. Canberra: Australian Bureau of Statistics.
- Australian Bureau of Statistics (2002). Paid Work: Trends in employment population ratios *Australian Social Trends, 2001* (pp. 133-136). Canberra: ABS.
- Australian Bureau of Statistics (2004). *Australian Social Trends, 2004* (Cat. No. 4102.0). Canberra: ABS.
- Australian Bureau of Statistics (2005a). *Australian Social Trends, 2005* (Cat. No. 4102.0). Canberra: ABS.
- Australian Bureau of Statistics (2005b). *Year Book Australia, 2005*. Canberra: Australian Bureau of Statistics.
- Australian Bureau of Statistics (2007). *Australian Capital Territory in Focus 2007* (Cat. No. 1307.8). Canberra: ABS.
- Australian Bureau of Statistics (2008). *Yearbook 2008* (Cat. No. 1301.0). Canberra: ABS.
- Australian Bureau of Statistics (2009). *Australian Economic Indicators Jan 2009* (Cat. No. 1350.0). Canberra: ABS.
- Australian Institute of Health and Welfare (2007). *Statistics on Drug Use in Australia 2006* (No. 18, Cat. no. PHE 80.). Canberra: AIHW.
- Bachman, J. G., O'Malley, P. M., Schulenberg, J. E., Johnston, L. D., Bryant, A. L., & Merline, A. C. (2002). *The Decline of Substance Use in Young Adulthood: Changes in social activities, roles and beliefs*. Mahwah, NJ: Lawrence Erlbaum Associates.
- Bachman, J. G., O'Malley, P. M., Schulenberg, J. E., Johnston, L. D., Freedman-Doan, P., & Messersmith, E. E. (2008). *The Education-Drug Use Connection: How successes and failures in school relate to adolescent smoking, drinking, drug use, and delinquency*. New York: Lawrence Erlbaum Associates.
- Bachman, J. G., & Schulenberg, J. (1993). How part-time work intensity relates to drug use, problem behavior, time use, and satisfaction among high school seniors: Are these consequences or merely correlates? *Developmental Psychology, 29*, 220-235.
- Bachman, J. G., Wadsworth, K. N., O'Malley, P. M., Johnston, L. D., & Schulenberg, J. E. (1997). *Smoking, Drinking and Drug Use in Young Adulthood: The impacts of new freedoms and new responsibilities*. Mahwah, NJ: Lawrence Erlbaum Associates.
- Ball, S., Maguire, M., & Macrae, S. (2000). Space, work and the new 'urban economies'. *Journal of Youth Studies, 3*, 279-300.
- Baltes, P. B. (1987). Theoretical propositions of life-span developmental psychology: On the dynamics between growth and decline. *Developmental Psychology, 23*, 611-626.
- Baron, R., & Kenny, D. (1986). The moderator-mediator distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology, 51*, 1173-1182.
- Bell, S., & Lee, C. (2008). Transitions in emerging adulthood and stress among young Australian women. *International Journal of Behavioural Medicine, 14*, 208-288.
- Bendixen, M., Endresen, I. M., & Olweus, D. (2003). Variety and frequency scales of antisocial involvement: Which one is better? *Legal and Criminological Psychology, 8*, 135-150.

- Bentler, P. M. (1990). Comparative fit indexes in structural models. *Psychological Bulletin*, 107, 238-246.
- Beyers, J. M., Loeber, R., Wikström, P.-O. H., & Stouthamer-Loeber, M. (2001). What predicts violence in better-off neighborhoods? *Journal of Abnormal Child Psychology*, 29, 369-381.
- Björkqvist, K., Lagerspetz, K. M. J., & Kaukianinen, A. (1992). Do girls manipulate and boys fight? Developmental trends in regard to direct and indirect aggression. *Aggressive Behavior*, 18, 117-127.
- Björkqvist, K., Österman, K., & Kaukianinen, A. (1992). The development of direct and indirect aggressive strategies in males and females. In K. Björkqvist & P. Niemela (Eds.), *Of mice and women: Aspects of female aggression* (pp. 51-64). San Diego, CA: Academic Press.
- Bond, L., Butler, H., Thomas, L., Carlin, J., Glover, S., Bowes, G., et al. (2007). Social and school connectedness in early secondary school as predictors of late teenage substance use, mental health, and academic outcomes. *Journal of Adolescent Health*, 40, 357.e359-357.e318.
- Bond, L., Carlin, L., Thomas, L., Ruin, K., & Patton, G. (2001). Does bullying cause emotional problems? A prospective study of young teenagers. *British Medical Journal*, 323, 480-484.
- Bosworth, K., Espelage, D. L., & Simon, T. R. (1999). Factors Associated with Bullying Behavior in Middle School Students. *The Journal of Early Adolescence*, 19, 341-362.
- Boulton, M., & Smith, P. K. (1994). Bully/victim problems in middle school children: Stability, perceived competence, peer perception and peer acceptance. *British Journal of Developmental Psychology*, 12, 315-329.
- Boulton, M., & Underwood, K. (1992). Bully/victim problems in middle-school children: Stability, self-perceived competence, peer perceptions and peer acceptance. *British Journal of Educational Psychology*, 62, 73-87.
- Braithwaite, V. (2006). *Bullying Shame* (Unpublished manuscript): Regulatory Institutions Network, The Australian National University.
- Braithwaite, V., Ahmed, E., Morrison, B., & Reinhart, M. (2003). Researching the prospects for restorative justice practice in schools: The 'Life at School' survey 1996-9. In L. Walgrave (Ed.), *Repositioning Restorative Justice* (pp. 169-190). Cullompton, Devon: Willan Publishing.
- Brame, B., Nagin, D. S., & Tremblay, R. E. (2001). Developmental trajectories of physical aggression from school entry to late adolescence. *Journal of Child Psychology and Psychiatry*, 42, 503-512.
- Bricknell, S. (2008). Trends in violent crime. *Trends and Issues in Crime and Criminal Justice*, 359.
- Broidy, L. M., Nagin, D. S., Tremblay, R. E., Bates, J. E., Brame, B., Dodge, K. A., et al. (2003). Developmental trajectories of childhood disruptive behaviors and adolescent delinquency: A six-site, cross-national study. *Developmental Psychology*, 39, 222-245.
- Brook, J., & Newcomb, M. (1995). Childhood aggression and unconventionality: Impact on later academic achievement, drug use and workforce involvement. *The Journal of Genetic Psychology*, 156, 393-410.
- Bryant, A. L., & Zimmerman, M. A. (2002). Examining the effects of academic beliefs and behaviors on changes in substance use among urban adolescents. *Journal of Educational Psychology*, 94, 621-637.

- Budd, T., Sharp, C., & Mayhew, P. (2005). *Offending in England and Wales: First results from the 2003 Crime and Justice Survey*. London: Home Office. Research Study No. 275.
- Bushman, B. J. (1997). Effects of alcohol on human aggression. Validity of proposed explanations. *Recent Developments in Alcoholism*, 13, 227-243.
- Cairns, R. B., & Cairns, B. D. (1994). *Life lines and risks: Pathways of youth in our time*. New York: Cambridge University Press.
- Cairns, R. B., & Cairns, B. D. (2000). The natural history and developmental functions of aggression. In A. J. Sameroff, M. Lewis & S. M. Miller (Eds.), *Handbook of Developmental Psychopathology* (2nd ed.). New York: Kluwer Academic/Plenum Publishers.
- Cairns, R. B., Cairns, B. D., Neckerman, H. J., Ferguson, L. L., & Gariépy, J.-L. (1989). Growth and aggression: 1. Childhood to early adolescence. *Developmental Psychology*, 25, 230-330.
- Camodeca, M., & Goossens, F. A. (2005). Aggression, social cognitions, anger and sadness in bullies and victims. *Journal of Child Psychology and Psychiatry*, 46, 186-197.
- Camodeca, M., Goossens, F. A., Schuengel, C., & Terwogt, M. M. (2003). Links between social information processing in middle childhood and involvement in bullying. *Aggressive Behavior*, 29, 116-127.
- Camodeca, M., Terwogt, M. M., & Schuengel, C. (2002). Bullying and victimization among school-age children: Stability and links to proactive and reactive aggression. *Social Development*, 11, 332-345.
- Caspi, A. (2000). The child is the father of the man: Personality continuities from childhood to adulthood. *Journal of Personality and Social Psychology*, 78, 158-172.
- Caspi, A., Elder, G., & Bem, D. (1987). Moving against the world: Life course patterns of explosive children. *Developmental Psychology*, 23, 308-313.
- Caspi, A., Henry, B., McGee, R. O., Moffitt, T. E., & Silva, P. A. (1995). Temperamental origins of child and adolescent behavior problems: From age three to age fifteen. *Child Development*, 66, 55-68.
- Caspi, A., Wright, B. R. E., Moffitt, T. E., & Silva, P. A. (1998). Early failure in the labor market: Childhood and adolescent predictors of unemployment in the transition to adulthood. *American Sociological Review*, 63, 424-451.
- Catalano, R., Park, J., Harachi, T., Haggarty, K., Abbott, R., & Hawkins, J. D. (2005). Mediating the effects of poverty, gender, individual characteristics and external constraints on antisocial behavior: A test of the social development model and implications for developmental life course theory. In D. P. Farrington (Ed.), *Integrated developmental and life-course theories of offending* (Vol. 14, pp. 93-124). New Jersey: Transaction Publishers.
- Catalano, R. F., Berglund, L. M., Ryan, J. A. M., Lonczak, H. S., & Hawkins, J. D. (2004). Positive youth development in the United States: Research findings on evaluations of positive youth development programs. *The Annals of the American Academy of Political and Social Science*, 591, 98-124.
- Catalano, R. F., Haggerty, K. P., Oesterle, S., Fleming, C. B., & Hawkins, J. D. (2004). The importance of bonding to school for healthy development: Findings from the Social Development Research Group. *Journal of School Health*, 74, 252-261.
- CIT (2008). *Canberra Institute of Technology Annual Report 2007*. Canberra: ACT Government.

- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences*. Hillsdale, NJ: Erlbaum.
- Cohen, L. E., & Felson, M. (1979). Social change and crime rate trends: A routine activities approach. *American Sociological Review*, 44, 588-608.
- Coie, J. D., Dodge, K. A., Terry, R., & Wright, V. (1991). The role of aggression in peer relations: An analysis of aggression episodes in boys' peer relations. *Child Development*, 62, 812-826.
- Cole, P., Michel, M., & Teti, L. (1994). The development of emotion regulation and dysregulation: A clinical perspective. *Monographs of the Society for Research on Child Development*, 59, 73-100.
- Collins, C., Kenway, J., & McLeod, J. (2000). Factors influencing the educational performance of males and females in school and their initial destinations after leaving school, *Report to the Department of Education, Employment and Workplace Relations*. Canberra.
- Collins, W. A., Maccoby, E. E., Steinberg, L., Hetherington, E. M., & Bornstein, M. H. (2000). Contemporary research on parenting: The case for nature and nurture. *American Psychologist*, 55, 218-232.
- Conger, R., Wallace, L., Sun, Y., Simons, R., McLoyd, V., & Brody, G. (2002). Economic pressure in African American families: A replication and extension of the family stress model. *Developmental Psychology*, 38, 179-193.
- Connolly, J., Pepler, D., Craig, W. M., & Taradash, A. (2000). Dating experiences of bullies in early adolescence. *Child Maltreatment*, 5, 299-310.
- Côté, J. E. (2006). Emerging adulthood as an institutionalized moratorium: Risks and benefits to identity formation. In J. J. Arnett & J. L. Tanner (Eds.), *Emerging adults in America: Coming of age in the 21st century* (pp. 85-116). Washington, DC: American Psychological Association.
- Côté, S. M., Vaillancourt, T., Barker, E. D., Nagin, D., & Tremblay, R. E. (2007). The joint development of physical and indirect aggression: Predictors of continuity and change during childhood. *Development and Psychopathology*, 19, 37-55.
- Cowie, H., Naylor, P., Rivers, I., Smith, P. K., & Pereira, B. (2002). Measuring workplace bullying. *Aggression & Violent Behavior*, 7, 33-51.
- Craig, W. (1998). The relationship among bullying, victimization, depression, anxiety, and aggression in elementary school children. *Personality and Individual Differences*, 24, 123-130.
- Crick, N., & Bigbee, M. (1998). Relational and overt forms of peer victimisation: a multiinformant approach. *Journal of Consulting and Clinical Psychology*, 66, 337-347.
- Crick, N., & Dodge, K. (1994). A review and reformulation of social-information processing mechanisms in children's social adjustment. *Psychological Bulletin*, 115, 74-101.
- Crick, N., & Dodge, K. (1999). 'Superiority' is in the eye of the beholder: A comment on Sutton, Smith and Swettenham. *Social Development*, 8, 128-131.
- Crick, N., & Grotpeter, J. (1996). Children's treatment by peers: Victims of relational and overt aggression. *Development and Psychopathology*, 8, 367-380.
- Cunningham, N. J. (2007). Level of bonding to school and perception of the school environment by bullies, victims and bully-victims. *Journal of Early Adolescence*, 27, 457-478.
- Damon, W. (1988). *The moral child- nurturing children's natural moral growth*. New York: Free Press.

- Demary, M. K., & Malecki, C. K. (2003). Perceptions of the frequency and importance of social support by students classified as victims, bullies, and bully/victims in an urban middle school. *School Psychology Review*, 32, 471-489.
- Dodge, K. A. (2003). Do social-information-processing patterns mediate aggressive behavior? In B. B. Lahey, T. E. Moffitt & A. Caspi (Eds.), *Causes of Conduct Disorder and Juvenile Delinquency* (pp. 254-276). New York: The Guildford Press.
- Dodge, K. A., & Pettit, G. S. (2003). A biopsychosocial model of the development of chronic conduct problems in adolescence. *Developmental Psychology*, 39, 349-371.
- Donker, A. G., Smeenk, W. H., van der Laan, P. H., & Verhulst, F. C. (2003). Individual stability of antisocial behavior from childhood to adulthood: Testing the stability postulate of Moffitt's developmental theory. *Criminology*, 41, 593-609.
- Dubow, E., Huesmann, L., Boxer, P., Pulkkinen, L., & Kokko, K. (2006). Middle childhood and adolescent contextual and personal predictors of adult educational outcomes: A mediational model in two countries. *Developmental Psychology*, 42, 937-949.
- Dubow, E. F., Boxer, P., & Huesmann, L. R. (2008). Childhood and adolescent predictors of early and middle adulthood alcohol use and problem drinking: the Columbia County Longitudinal Study. *Addiction*, 103 (Suppl. 1), 36-47.
- Dubow, E. F., Boxer, P., & Huesmann, L. R. (2009). Long-term effects of parents' education on children's educational and occupational success. *Merrill-Palmer Quarterly*, 55, 224-249.
- Duncan, R. D. (1999). Peer and sibling aggression: An investigation of intra- and extra-familial bullying. *Journal of Interpersonal Violence*, 14, 871-886.
- Eccles, J. S., Lord, S. E., & Roeser, R. W. (1996). Round holes, square pegs, rocky roads and sore feet: A discussion of stage-environment fit theory applied to families and school. In D. Cicchetti & S. L. Toth (Eds.), *Adolescence: Opportunities and Challenges* (Vol. 7, pp. 47-92). Rochester: University of Rochester Press.
- Eccles, J. S., Midgley, C., Buchanan, C. M., Wigfield, A., Reuman, D., & Mac Iver, D. (1993). Development during adolescence: The impact of stage/environment fit. *American Psychologist*, 48, 90-101.
- Eccles, J. S., Templeton, J., Barber, B. L., & Stone, M. (2003). Adolescence and emerging adulthood: The critical passage ways to adulthood. In M. H. Bornstein, L. Davidson, C. L. M. Keyes & K. A. Moore (Eds.), *Well-being: Positive Development Across the Life Course* (pp. 383-406). Mahwah, NJ.: Lawrence Erlbaum Associates.
- Edwards, J. R., & Lambert, L. S. (2007). Methods for integrating moderation and mediation: A general analytical framework using moderated path analysis. *Psychological Methods*, 12, 1-22.
- Efron, B., & Tibshirani, R. (1993). *An introduction to the bootstrap*. New York: Chapman & Hall/CRC.
- Eisenberg, N. (2000). Emotion, regulation, and moral development. *Annual Review of Psychology*, 51, 665-697.
- Eisenberg, N., Fabes, R., Shepard, S., Murphy, B., Guthrie, I., Jones, S., et al. (1997). Contemporaneous and longitudinal prediction of children's social functioning from regulation and emotionality. *Child Development*, 68, 642-664.

- Eisenberg, N., Fabes, R. A., Guthrie, I. K., & Reiser, M. (2000). Dispositional Emotionality and Regulation: Their Role in Predicting Quality of Social Functioning. *Journal of Personality & Social Psychology*, 78, 136-157.
- Eisenberg, N., Guthrie, I., Fabes, R., Shepard, S., Losoya, S., Murphy, B., et al. (2000). Prediction of elementary school children's externalising problem behaviors from attentional and behavioral regulation and negative emotionality. *Child Development*, 71, 1367-1382.
- Eisenberg, N., Spinrad, T. L., & Morris, A. S. (2002). Regulation, resiliency, and quality of social functioning. *Self and Identity*, 1, 121-128.
- Elder, G., Johnson, M., & Crosnoe, R. (2003). The emergence and development of life course theory. In J. Mortimer & M. Shanahan (Eds.), *Handbook of the Life Course* (pp. 3-19). New York: Kluwer Academic/Plenum Publishers.
- Elliott, D. S. (1994). Serious violent offenders: onset, developmental course, and termination. The American Society of Criminology 1993 presidential address. *Criminology*, 32, 1-21.
- Englund, M. M., Egeland, B., Oliva, E. M., & Collins, W. A. (2008). Childhood and adolescent predictors of heavy drinking and alcohol use disorders in early adulthood: A longitudinal developmental analysis. *Addiction*, 103, 23-35.
- Erikson, E. H. (1968). *Identity: Youth and crisis*. New York: Norton.
- Eron, L. D., & Huesmann, L. R. (1987). The stability of aggressive behaviour in cross-national comparison. In C. Kagitcibasi (Ed.), *Growth and Progress in Cross Cultural Psychology* (pp. 207-218). Lisse, Holland: Swets & Zeitlinger.
- Espelage, D., & Swearer, S. (2003). Research on school bullying and victimization: What have we learned and where do we go from here? *School Psychology Review*, 32, 365-383.
- Espelage, D. L., Bosworth, K., & Simon, T. R. (2001). Short-term stability and prospective correlates of bullying in middle-school students: An examination of potential demographic, psychosocial, and environmental influences. *Violence and Victims*, 16, 411-426.
- Eysenck, S. B. J., & Eysenck, H. J. (1977). The place of impulsiveness in a dimensional system of personality description. *British Journal of Social and Clinical Psychology*, 2, 46-55.
- Farmer, E. (1995). Extremity of externalizing behavior and young adult outcomes. *Journal of Child Psychology and Psychiatry*, 36, 617-632.
- Farrington, D. (1995). The development of offending and antisocial behaviour from childhood: Key findings from the Cambridge Study in Delinquent Development. *Journal of Child Psychology and Psychiatry*, 36, 929-964.
- Farrington, D. (2007a). Advancing knowledge about desistance. *Journal of Contemporary Criminal Justice*, 23, 125-134.
- Farrington, D. P. (1991). Childhood aggression and adult violence: Early precursors and later-life outcomes. In D. J. Pepler & K. H. Rubin (Eds.), *The Development and Treatment of Childhood Aggression*. Hillsdale, NJ: Lawrence Erlbaum Associates.
- Farrington, D. P. (1993). Understanding and preventing bullying. In M. Tonry (Ed.), *Crime and Justice: A Review of Research* (Vol. 17, pp. 381-458). Chicago: University of Chicago Press.
- Farrington, D. P. (2005a). Childhood origins of antisocial behavior. *Clinical Psychology & Psychotherapy*, 12, 177-190.
- Farrington, D. P. (2005b). The integrated cognitive antisocial potential (ICAP) theory. In D. P. Farrington (Ed.), *Integrated developmental and life-course theories of offending* (Vol. 14, pp. 73-92). New Jersey: Transaction Publishers.

- Farrington, D. P. (2007b). Origins of violent behavior over the life span. In D. J. Flannery, A. T. Vazsonyi & I. D. Waldman (Eds.), *The Cambridge Handbook of Violent Behaviour and Aggression* (pp. 19-48). Cambridge: Cambridge University Press.
- Farrington, D. P., Loeber, R., & Jolliffe, D. (2008). The age-crime curve in reported offending *Violence and Serious Theft: Development and Prediction from Childhood to Adulthood* (pp. 77-104). New York: Routledge.
- Farrington, D. P., Loeber, R., Jolliffe, D., & Pardini, D. A. (2008). Promotive and risk processes at different life stages *Violence and Serious Theft: Development and Prediction from Childhood to Adulthood* (pp. 169-230). New York: Routledge.
- Farrington, D. P., & West, D. J. (1981). The Cambridge study in delinquent development. In S. A. Mednick, A. E. Baert & B. P. Bachmann (Eds.), *Prospective Longitudinal Research: An Empirical Basis for the Primary Prevention of Psychosocial Disorders* (pp. 137-145). Oxford: Oxford University Press.
- Federal Bureau of Investigation (2004). *Crime in the United States, 2003*. Washington, DC.
- Felson, R., Savolainen, J., Aaltonen, M., & Moustgaard, H. (2008). Is the association between alcohol use and delinquency causal or spurious? *Criminology*, 46, 785-808.
- Felson, R. B., Teasdale, B., & Burchfield, K. B. (2008). The influence of being under the influence: Alcohol effects on adolescent violence. *Journal of Research in Crime and Delinquency*, 45, 119-141.
- Fergusson, D., & Horwood, L. J. (1998). Early conduct problems and later life opportunities. *Journal of Child Psychology and Psychiatry*, 39, 1097-1108.
- Fergusson, D. M., & Horwood, J. L. (2000). Alcohol abuse and crime: A fixed-effects regression analysis. *Addiction*, 95, 1525-1536.
- Fergusson, D. M., & Horwood, J. L. (2002). Male and female offending trajectories. *Development and Psychopathology*, 14, 159-177.
- Fergusson, D. M., Horwood, J. L., & Nagin, D. S. (2000). Offending trajectories in a New Zealand birth cohort. *Criminology*, 38, 525-551.
- Fergusson, D. M., Horwood, L. J., & Ridder, E. M. (2005). Show me the child at seven: the consequences of conduct problems in childhood for psychosocial functioning in adulthood. *Journal of Child Psychology and Psychiatry*, 46, 837-849.
- Flanagan, C. (2006). Public scholarship and youth at the transition to adulthood. *New Directions for Teaching and Learning*, 105, 41-50.
- Flora, D. B., Khoo, S. T., & Chassin, L. (2007). Moderating effects of a risk factor: Modeling longitudinal moderated mediation in the development of adolescent heavy drinking In T. D. Little, J. A. Bovaird & N. A. Card (Eds.), *Modeling contextual effects in longitudinal studies* (pp. 231-254). Mahwah, NJ: Lawrence Erlbaum Associates, Publishers.
- Ford, D. L., & Lerner, R. M. (1992). *Developmental Systems Theory: An integrative approach*. Newbury Park, CA: Sage.
- Forero, R., McLellan, L., Rissel, C., & Bauman, A. (1999). Bullying behaviour and psychosocial health among school students in New South Wales, Australia: cross sectional survey. *The British Medical Journal*, 319, 344-348.
- Furlong, A., & Cartmel, F. (1997). *Young people and social change: Individualization and risk in late modernity*. Buckingham, UK: Open University Press.
- Giancola, P. R. (2000). Executive functioning: A conceptual framework for alcohol-related aggression. *Experimental and clinical psychopharmacology*, 8, 576-597.

- Goodnow, J. (2007). Adding social contexts to developmental analyses of crime prevention. In A. France & R. Homel (Eds.), *Pathways and Crime Prevention: Theory, Policy and Practice* (pp. 51-66). Cullompton, Devon: Willan Publishing.
- Gore, S., Aseltine, R., Colten, M., & Lin, B. (1997). Life after high school: development, stress and well-being. In I. Gotlib & B. Wheaton (Eds.), *Stress and adversity over the lifecourse: Trajectories and turning points* (pp. 197-214). Cambridge: Cambridge University Press.
- Graham, K., & Homel, R. (2008). *Raising the Bar: Preventing aggression in and around bars, pubs and clubs*. Cullompton, Devon: Willan Publishing.
- Groube, M. (1987). *Control in adolescent stress and coping*. Unpublished Honours thesis, The Australian National University, Canberra.
- Guldi, M., Page, M. E., & Stevens, A. H. (2007). Family background and children's transitions to adulthood over time. In S. Danziger & C. E. Rouse (Eds.), *The Price of Independence: The Economics of Early Adulthood* (pp. 261-277). New York: Russell Sage Foundation.
- Guo, J., Hawkins, J. D., Hill, K. G., & Abbott, R. D. (2001). Childhood and adolescent predictors of alcohol abuse and dependence in young adulthood. *Journal of Studies on Alcohol*, 62, 754-762.
- Hamilton, S. F., & Hamilton, M. A. (2006). School, work, and emerging adulthood. In J. J. Arnett & J. L. Tanner (Eds.), *Emerging adults in America: Coming of age in the 21st century* (pp. 257-277). Washington, DC: American Psychological Association.
- Hanish, L., & Guerra, N. (2002). A longitudinal analysis of patterns of adjustment following peer victimization. *Development and Psychopathology*, 14, 69-89.
- Harford, K. G., & Muthén, B. O. (2000). Adolescent and young adult antisocial and adult alcohol use disorders: A fourteen-year prospective follow-up in a National Survey. *Journal of Studies on Alcohol*, 61, 524-528.
- Harris, N. (2001). Shaming and shame: Regulating drink-driving. In E. Ahmed, N. Harris, J. Braithwaite & V. Braithwaite (Eds.), *Shame management through reintegration* (pp. 73-192). Cambridge: Cambridge University Press.
- Haveman, R., & Wolfe, B. (1995). The determinants of children's attainments: A review of methods and findings. *Journal of Economic Literature*, 33, 1829-1878.
- Hawker, D., & Boulton, M. (2000). Twenty years' research on peer victimization and psychosocial maladjustment: A meta-analytic review of cross-sectional studies. *Journal of Child Psychology and Psychiatry*, 41, 441-455.
- Hawkins, D. L., Pepler, D., & Craig, W. (2001). Naturalistic observations of peer interventions in bullying. *Social Development*, 10, 512-527.
- Hawkins, J. D., Catalano, R., & Miller, J. Y. (1992). Risk and protective factors for alcohol and other drug problems in adolescence and early adulthood: implications for substance abuse prevention. *Psychological Bulletin*, 112, 64-105.
- Hawkins, J. D., Graham, J. W., Maguin, E., Abbott, R. D., Hill, K. G., & Catalano, R. F. (1997). Exploring the effects of age of alcohol use initiation and psychosocial risk factors on subsequent alcohol misuse. *Journal of Studies on Alcohol*, 58, 280-290.
- Hawkins, J. D., Smith, B. H., Hill, K. G., Kosterman, R., Catalano, R. F., & Abbott, R. D. (2003). Understanding and preventing crime and violence: Findings from the Seattle Social Development Project. In T. P. Thornberry & M. D. Krohn (Eds.), *Taking Stock of Delinquency: An Overview of Findings from Contemporary*

- Longitudinal Studies* (pp. 255-312). New York: Kluwer Academic/Plenum Publishers.
- Hayford, S. R., & Furstenberg, F. F. (2008). Delayed adulthood, delayed desistance? Trends in the age distribution of problem behaviors. *Journal of Research on Adolescence*, 18, 285-304.
- Haynie, D. L., Nansel, T. R., Eitel, P., Crump, A. D., Saylor, K., Yu, K., et al. (2001). Bullies, victims, and bully/victims: Distinct groups of at-risk youth. *Journal of Early Adolescence*, 21, 29-49.
- Heinz, W. (2002). Self-socialization and post-traditional society. In R. A. J. Settersten & T. Owens (Eds.), *New Frontiers in Socialization*. New York: Elsevier.
- Henry, B., Caspi, A., Moffitt, T. E., & Silva, P. A. (1996). Temperamental and familial predictors of violent and non-violent criminal convictions: From 3 to age 18. *Developmental Psychology*, 32, 614-623.
- Herrenkohl, T. I., Hill, K. G., Chung, I.-J., Guo, J., Abbott, R. D., & Hawkins, J. D. (2003). Protective factors against serious violent behavior in adolescence: A prospective study of aggressive children. *Social Work Research*, 27, 179-191.
- Herrenkohl, T. I., Maguin, E., Hill, K. G., Hawkins, J. D., Abbott, R. D., & Catalano, R. F. (2000). Developmental risk factors for youth violence. *Journal of Adolescent Health*, 26, 176-186.
- Hinshaw, S. P. (1992). Externalizing behavior problems and academic underachievement in childhood and adolescence: Causal relationships and underlying mechanisms. *Psychological Bulletin*, 111, 127-155.
- Holmqvist, R. (2008). Psychopathy and affect consciousness in young criminal offenders. *Journal of Interpersonal Violence*, 23, 209-224.
- Home Office (2004). *Criminal Statistics, England and Wales, 2003*. London: The Stationery Office.
- Horney, J., Osgood, D. W., & Marshall, I. H. (1995). Criminal careers in the short-term: Intra-individual variability in crime and its relation to local life circumstances. *American Sociological Review*, 60, 655-673.
- Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling*, 6, 1-55.
- Huang, B., White, H. R., Kosterman, R., Catalano, R. F., & Hawkins, J. D. (2001). Developmental associations between alcohol and interpersonal aggression during adolescence. *Journal of Research in Crime and Delinquency*, 38, 64-83.
- Huesmann, L. (1998). The role of social information processing and cognitive schema in the acquisition and maintenance of habitual aggressive behavior. In L. Huesmann, R. Geen & E. Donnerstein (Eds.), *Human Aggression: Theories, Research and Implications for Behavior* (pp. 73-109). San Diego: Academic Press.
- Huesmann, L., & Moise, J. (1998). Stability and continuity of aggression from early childhood to young adulthood. In D. Flannery & C. Huff (Eds.), *Youth Violence: Prevention, Intervention and Social Policy* (pp. 73-95). Washington, DC: American Psychiatric Press.
- Huesmann, L. R. (1988). An information processing model for the development of aggression. *Aggressive Behavior*, 10, 243-251.
- Hurrelman, K. (1990). Health promotion for adolescents: Preventive and corrective strategies against problem behavior. *Journal of Adolescence*, 13, 231-250.
- Hussong, A. M., Curran, P. J., Moffitt, T. E., Caspi, A., & Carrig, M. M. (2004). Substance abuse hinders desistance in young adults' antisocial behavior. *Development and Psychopathology*, 16, 1029-1046.

- Jacob, B. A. (2002). Where the boys aren't: non-cognitive skills, returns to school and the gender gap in higher education *Economics of Education Review*, 21, 589-598.
- Jelicic, H., Theokas, C., Phelps, E., & Lerner, R. M. (2007). Conceptualizing and measuring the context within person <- -> context models of human development: Implications for theory, research and application. In T. D. Little, J. A. Bovaird & N. A. Card (Eds.), *Modeling contextual effects in longitudinal studies* (pp. 437-456). Mahwah, NJ: Lawrence Erlbaum Associates, Publishers.
- Jessor, R., Donovan, J. E., & Costa, F. (1991). *Beyond adolescence: Problem behavior and young adult development*. Cambridge: Cambridge University Press.
- Johnson, L. (1993). *The modern girl: Childhood and growing up*. Sydney, NSW: Allen and Unwin.
- Kaltiala-Heino, R., Rimpelä, M., Rantanen, P., & Rimpelä, A. (2000). Bullying at school- an indicator of adolescents at risk for mental disorders. *Journal of Adolescence*, 23, 661-674.
- Keating, D. (1990). Adolescent thinking. In S. Feldman & G. Elliot (Eds.), *At the threshold: The developing adolescent* (pp. 54-89). Cambridge, MA: Harvard University Press.
- Keltner, D., & Beer, J. (2005). Self-conscious emotion and self-regulation. In A. Tesser, J. V. Wood & D. A. Stapel (Eds.), *On building, defending, and regulating the self: a psychological perspective* (pp. 197- 215). New York, NY: Psychology Press, Taylor and Francis Group.
- Keltner, D., Moffitt, T. E., & Stouthamer-Loeber, M. (1995). Facial expressions of emotion and psychopathy in adolescent boys. *Journal of Abnormal Psychology*, 104, 644-652.
- Kingston, L., & Prior, M. (1995). The development of patterns of stable, transient, and school-age onset aggressive behavior in young children. *Journal of the American Academy of Child and Adolescent Psychiatry*, 34, 348-358.
- Klinterberg, B. A., Andersson, T., Magnusson, D., & Stattin, H. (1993). Hyperactive behavior in childhood as related to subsequent alcohol problems and violent offending: A longitudinal study of male subjects. *Personality and Individual Differences*, 15, 381-388.
- Kochanska, G. (1993). Toward a synthesis of parental socialization and child temperament in early development of conscience. *Child Development*, 64.
- Kochenderfer-Ladd, B. (2004). Peer victimization: The role of emotions in adaptive and maladaptive coping. *Social Development*, 13, 329-349.
- Kochenderfer-Ladd, B., & Ladd, G. W. (2001). Variations in peer victimization: Relations to children's maladjustment. In J. Juvonen & S. Graham (Eds.), *Peer harassment in school: The plight of the vulnerable and victimised* (pp. 25-48). New York: The Guildford Press.
- Kokko, K., & Pulkkinen, L. (2000). Aggression in childhood and long-term unemployment in adulthood: A cycle of maladaptation and some protective factors. *Developmental Psychology*, 36, 463-472.
- Kokko, K., & Pulkkinen, L. (2005). Stability of aggressive behavior from childhood to middle age in women and men. *Aggressive Behavior*, 31, 485-497.
- Kokko, K., Tremblay, R., Lacourse, E., Nagin, D., & Vitaro, F. (2006). Trajectories of prosocial behaviour and physical aggression in middle childhood: Links to adolescent school dropout and physical violence. *Journal of Research on Adolescence*, 16, 403-428.
- Kokkonen, M., & Kinnunen, M.-L. (2006). Emotion regulation and well-being. In L. Pulkkinen, J. Kaprio & R. J. Rose (Eds.), *Socioemotional Development and*

- Health from Adolescence to Adulthood* (pp. 197-208). New York: Cambridge University Press.
- Kokkonen, M., Kinnunen, T., & Pulkkinen, L. (2002). Direct and indirect effects of adolescent self-control of emotions and behavioral expression on adult health outcomes. *Psychology and Health, 17*, 657-670.
- Kosterman, R., Graham, J., Hawkins, J. D., Catalano, R., & Herrenkohl, T. (2001). Childhood risk factors for persistence of violence in the transition to adulthood: A social development perspective. *Violence and Victims, 16*, 355-369.
- Kretschmar, J. M., & Flannery, D. J. (2007). Substance use and violent behavior. In D. J. Flannery, A. T. Vazsonyi & I. D. Waldman (Eds.), *The Cambridge Handbook of Violent Behaviour and Aggression* (pp. 647-663). Cambridge: Cambridge University Press.
- Krueger, R. F., Schmutte, P. S., Caspi, A., Moffitt, T. E., Campbell, K., & Silva, P. A. (1994). Personality traits are linked to crime among men and women: Evidence from a birth cohort. *Journal of Abnormal Psychology, 103*, 328-338.
- Kumpulainen, K., Räsänen, E., & Henttonen, I. (1999). Children involved in bullying: Psychological disturbance and the persistence of involvement. *Child Abuse and Neglect, 23*, 1253-1262.
- Kumpulainen, K., Räsänen, E., Henttonen, I., Almqvist, F., Kresanov, K., Linna, S.-L., et al. (1998). Bullying and psychiatric symptoms among elementary school-age children. *Child Abuse and Neglect, 22*, 705-717.
- Labouvie-Vief, G. (2006). Emerging structures of adult thought. In J. J. Arnett & J. L. Tanner (Eds.), *Emerging adults in America: Coming of age in the 21st century* (pp. 59-84). Washington, DC: American Psychological Association.
- Lacourse, E., Dupéré, V., & Loeber, R. (2008). Developmental trajectories of violence and theft *Violence and Serious Theft: Development and Prediction from Childhood to Adulthood* (pp. 231-268). New York: Routledge.
- Laub, J., & Sampson, R. (2001). Understanding desistance from crime. *Crime and Justice: A review of research, 28*, 1-69.
- Laub, J. H., Nagin, D. S., & Sampson, R. J. (1998). Trajectories of change in criminal offending: Good marriages and the desistance process. *American Sociological Review, 63*, 225-238.
- Lawrence, J. (2007). The pathways approach and its contributions to understanding and preventing antisocial behaviour. In A. France & R. Homel (Eds.), *Pathways and Crime Prevention: Theory, policy and practice*: Willan.
- Lemerise, E., & Arsenio, W. (2000). An integrated model of emotion processes and cognition in social information processing. *Child Development, 71*, 107-118.
- Lerner, R. M. (1991). Changing organism-context relations as the basic process of development: A developmental-contextual perspective. *Developmental Psychology, 27*, 27-32.
- Lerner, R. M. (2002). *Concepts and Theories of Human Development* (3rd ed.). Mahwah, NJ: Erlbaum.
- Lerner, R. M., & Castellino, D. R. (2002). Contemporary developmental theory and adolescence: Developmental systems and applied developmental science. *Journal of Adolescent Health, 31*, 122-135.
- Lerner, R. M., Dowling, E. M., & Anderson, P. M. (2003). Positive youth development: Thriving as the basis of personhood and civil society. *Applied Developmental Science, 7*, 172-180.
- Lerner, R. M., & Overton, W. F. (2008). Exemplifying the integrations of the relational developmental system: Synthesizing theory, research, and application to

- promote positive development and social justice *Journal of Adolescent Research*, 23, 245-255.
- Lewis, H. B. (1971). *Shame and guilt in neurosis*. New York: International University Press.
- Lewis, H. B. (1987). *The role of shame in symptom formation*. Hillsdale, NJ: Erlbaum.
- Liang, H., Flisher, A. J., & Lombard, C. J. (2007). Bullying, violence, and risk behavior in South African school students. *Child Abuse and Neglect*, 31, 161-171.
- Lipsey, M. W., & Derzon, J. H. (1998). Predictors of violent or serious delinquency in adolescence and early adulthood: A synthesis of longitudinal research. In R. Loeber & D. P. Farrington (Eds.), *Serious and violent juvenile delinquency: Risk factors and successful interventions*. Thousand Oaks, CA: Sage.
- Loeber, R. (1982). The stability of antisocial and delinquent child behavior: A review. *Child Development*, 53, 1431-1436.
- Loeber, R., Farrington, D. P., Stouthamer-Loeber, M., & White, H. R. (2008). *Violence and Serious Theft: Development and Prediction from Childhood to Adulthood*. New York: Routledge.
- Loeber, R., & Hay, D. (1997). Key issues in the development of aggression and violence from childhood to early adulthood. *Annual Review of Psychology*, 48, 371-410.
- Loeber, R., Keenan, K., & Zhang, Q. (1997). Boys' experimentation and persistence in developmental pathways toward serious delinquency. *Journal of Child and Family Studies*, 6, 321-357.
- Loeber, R., Pardini, D. A., Homish, D. L., Wei, E. H., Crawford, A. M., Farrington, D. P., et al. (2005). The prediction of violence and homicide in young men. *Journal of Consulting and Clinical Psychology*, 73, 1074-1088.
- Loeber, R., Pardini, D. A., Stouthamer-Loeber, M., & Raine, A. (2007). Do cognitive, physiological, and psychosocial risk and promotive factors predict desistance from delinquency in males? *Development and Psychopathology*, 19, 867-887.
- Loeber, R., & Stouthamer-Loeber, M. (1998). Development of juvenile aggression and violence: Some common misconceptions and controversies. *American Psychologist*, 53, 242-259.
- Lonczak, H. S., Huang, B., Catalano, R. F., Hawkins, J. D., Hill, K. G., Abbott, R. D., et al. (2001). The social predictors of adolescent alcohol misuse: A test of the social development model. *Journal of Studies on Alcohol*, 62, 179-189.
- Lösel, F., Bliesener, T., & Bender, D. (2007). Social information processing: Experiences of aggression in social contexts, and aggressive behavior in adolescents. *Criminal Justice and Behavior*, 34, 330-347.
- Luengo, M. A., Carrillo-de-la-Peña, M. T., Otero, J. M., & Romero, E. (1994). A short-term longitudinal study of impulsivity and antisocial behavior. *Journal of Personality and Social Psychology*, 66, 542-548.
- Luyckx, K., Schwartz, S. J., Goossens, L., & Pollock, S. (2008). Employment, sense of coherence, and identity formation: Contextual and psychosocial processes on the pathway to sense of adulthood. *Journal of Adolescent Research*, 23, 566-591.
- MacKinnon, D. P., & Dwyer, J. H. (1993). Estimating mediated effects in prevention studies. *Evaluation Review*, 17, 144 - 158.
- MacKinnon, D. P., Lockwood, C. M., & Williams, J. (2004). Confidence limits for the indirect effect: Distribution of the product and resampling methods. *Multivariate Behavioral Research*, 39, 99-128.
- Maggs, J. L., Patrick, M. E., & Feinstein, L. (2008). Childhood and adolescent predictors of alcohol use and problems in adolescence and adulthood in the National Child Development Study. *Addiction*, 103, 7-22.

- Magnusson, K. (2007). Maternal education and children's academic achievement during middle childhood. *Developmental Psychology*, 43, 1497-1512.
- Marks, G. N. (2006). The Transition to Full-time Work of Young People who do not go to University, *LSAY Research Report 49*. Melbourne, VIC: Australian Council for Educational Research (ACER).
- Marks, G. N., Fleming, N., Long, M., & McMillan, J. (2000). *Patterns of Participation in Year 12 and Higher Education in Australia: Trends and Issues* (No. 17). Melbourne, VIC: Australian Council for Educational Research.
- Masten, A., Burt, K., Roisman, G., Obradovic, J., Long, J., & Tellegen, A. (2004). Resources and resilience in the transition to adulthood: Continuity and change. *Development and Psychopathology*, 16, 1071-1093.
- Masten, A. S., Obradović, J., & Burt, K. (2006). Resilience in emerging adulthood: Developmental perspectives on continuity and transformation. In J. J. Arnett & J. L. Tanner (Eds.), *Emerging adults in America: Coming of age in the 21st century* (pp. 173-190). Washington, DC: American Psychological Association.
- Maughan, B., Pickles, A., Rowe, R., Costello, J. E., & Angold, A. (2000). Developmental trajectories of aggressive and non-aggressive conduct problems. *Journal of Quantitative Criminology*, 16, 199-221.
- McCord, J. (1992). The Cambridge-Somerville study: A pioneering longitudinal experimental study of delinquency prevention. In J. McCord & R. Tremblay (Eds.), *Preventing Antisocial Behavior: Interventions from Birth through to Adolescence* (pp. 196-206). London: The Guildford Press.
- McCord, J., & Ensminger, M. E. (1997). Multiple risks and comorbidity in an African-American population. *Criminal Behaviour and Mental Health*, 7, 339-352.
- McLeod, J., & Almazan, E. (2003). Connections between childhood and adulthood. In J. Mortimer & M. Shanahan (Eds.), *Handbook of the Life Course* (pp. 391-411). New York: Kluwer Academic/Plenum Publishers.
- Moffitt, T. E. (1993). Adolescence-limited and life-course-persistent antisocial behavior: A developmental taxonomy. *Psychological Review*, 100, 674-701.
- Moffitt, T. E. (2007). A review of research on the taxonomy of life-course persistent versus adolescence-limited antisocial behavior. In D. J. Flannery, A. T. Vazsonyi & I. D. Waldman (Eds.), *The Cambridge Handbook of Violent Behaviour and Aggression* (pp. 49-76). Cambridge: Cambridge University Press.
- Moffitt, T. E., & Caspi, A. (2001). Childhood predictors differentiate life-course persistent and adolescence-limited antisocial pathways among males and females. *Development and Psychopathology*, 13, 355-375.
- Moffitt, T. E., Caspi, A., Dickson, N., Silva, P. A., & Stanton, W. (1996). Childhood-onset versus adolescent-onset antisocial conduct in males: Natural history from age 3 to 18. *Development and Psychopathology*, 8, 399-424.
- Moffitt, T. E., Caspi, A., Harrington, H., & Milne, B. J. (2002). Males on the life-course-persistent and adolescence-limited antisocial pathways: Follow-up at age 26 years. *Development and Psychopathology*, 14, 179-207.
- Moffitt, T. E., Caspi, A., Krueger, R. F., Magdol, L., Margolin, G., Silva, P. A., et al. (1997). Do partners agree about abuse in their relationship? A psychometric evaluation of interpartner agreement. *Psychological Assessment*, 9, 47-56.
- Mooney, A., Creaser, R., & Blatchford, P. (1991). Children's views on teasing and fighting in junior schools. *Educational Research*, 33, 103-112.
- Morizot, J., & Le Blanc, M. (2007). Behavioral, self, and social control predictors of desistance from crime. *Journal of Contemporary Criminal Justice*, 23, 50-71.

- Morrison, B. (2006). School bullying and restorative justice: Toward a theoretical understanding of the role of respect, pride and shame. *Journal of Social Issues*, 62, 371-392.
- Mortimer, J. T., Finch, M. D., Ryu, S., Shanahan, M. J., & Call, K. T. (1996). The effects of work intensity on adolescent mental health, achievement, and behavioral adjustment: New evidence from a prospective study. *Child Development*, 67, 1243-1261.
- Mulvey, E. P., Steinberg, L., Fagan, J., Cauffman, E., Piquero, A. R., Chassin, L., et al. (2004). Theory and research on desistance from antisocial activity among serious adolescent offenders. *Youth Violence and Juvenile Justice*, 2, 213-236.
- Murdoch, D., Pihl, R. O., & Ross, D. (1990). Alcohol and crimes and violence: Present issues. *The International Journal of the Addiction*, 25, 1065-1081.
- Murphy, B., Shepard, S., Eisenberg, N., & Fabes, R. (2004). Concurrent and across time prediction of young adolescents' social functioning: The role of emotionality and regulation. *Social Development*, 13, 56-86.
- Musher-Eizenman, D., Boxer, P., Danner, S., Dubow, E., Goldstein, S., & Heretick, D. (2004). Social-cognitive mediators of the relation of environmental and emotion regulation factors to children's aggression. *Aggressive Behavior*, 30, 389-408.
- Mynard, H., & Joseph, S. (1997). Bully/victim problems and their association with Eysenck's personality dimensions in 8- to 13-year-olds. *British Journal of Educational Psychology*, 67, 51-54.
- Nagin, D., & Tremblay, R. E. (1999). Trajectories of boys' physical aggression, opposition, and hyperactivity on the path to physically violent and nonviolent juvenile delinquency. *Child Development*, 70, 1181-1196.
- Nagin, D. S., Farrington, D. P., & Moffitt, T. E. (1995). Life-course trajectories of different types of offenders. *Criminology*, 33, 111-139.
- Nagin, D. S., & Tremblay, R. E. (2005). What has been learned from group-based trajectory modeling? Examples from physical aggression and other problem behaviors. *The Annals of the American Academy of Political and Social Science*, 602, 82-117.
- Nansel, T. R., Craig, W., Overpeck, M., Saluja, G., Ruan, W. J., & The Health Behaviour in School-aged Children Bullying Analyses Working Group (2004). Cross-National consistency in the relationship between bullying behaviors and psychosocial adjustment. *Archives of Pediatric adolescent medicine*, 158, 730-736.
- Nansel, T. R., Overpeck, M., Haynie, D. L., Ruan, W. J., & Scheidt, P. C. (2003). Relationships between bullying and violence among US youth. *Archives of Pediatric Adolescent Medicine*, 157, 348-353.
- Nansel, T. R., Overpeck, M., Pilla, R. S., Ruan, W. J., Simons-Morton, B. G., & Scheidt, P. (2001). Bullying behaviors among US youth: Prevalence and association with psychosocial adjustment. *The Journal of the American Medical Association*, 285, 2094-2100.
- Odgers, C. L., Moffitt, T. E., Broadbent, J. M., Dickson, N., Hancox, R. J., Harrington, H., et al. (2008). Female and male antisocial trajectories: from childhood origins to adult outcomes. *Development and Psychopathology*, 20, 673-716.
- Oesterle, S., Hill, K. G., Hawkins, J. D., & Abbott, R. D. (2008). Positive functioning and alcohol-use disorders from adolescence to young adulthood. *Journal of Studies on Alcohol and Drugs*, 69, 100-111.
- Ohman, A., Dimberg, U., & Esteves, F. (1989). Preattentive activation of aversive emotions. In T. Archer & L. G. Nilsson (Eds.), *Aversion, Avoidance and Anxiety: Perspectives on aversively motivated behavior*. Hillsdale, NJ: Erlbaum.

- Olson, S., Schilling, E., & Bates, J. (1999). Measurement of impulsivity: Construct coherence, longitudinal stability, and relationship with externalising problems in middle childhood and adolescence. *Journal of Abnormal Child Psychology*, 27, 151-165.
- Olweus, D. (1978). *Aggression in the schools: Bullies and whipping boys*. Washington, DC: Hemisphere.
- Olweus, D. (1979). Stability of aggressive reaction patterns in males: A review. *Psychological Bulletin*, 86, 852-875.
- Olweus, D. (1993a). Bully victim problems among schoolchildren: Basic facts and an effective intervention program. *Aggressive Behavior*, 19, 6-6.
- Olweus, D. (1993b). *Bullying at School: What We Know and What we Can Do*. Oxford: Blackwell Publishers.
- Osgood, D. W., & Flanagan, C. (2008). Exploring the changing meaning of work for American high school seniors from 1976 to 2005. , *Working Paper: Network on Transitions to Adulthood Research Network*.
- Ouimet, M., & Le Blanc, M. (1996). The role of life experiences in the continuation of the adult criminal career. *Criminal Behaviour and Mental Health*, 6, 73-97.
- Owens, L., Daly, A., & Slee, P. (2005). Sex and age differences in victimisation and conflict resolution among adolescents in a South Australian school. *Aggressive Behavior*, 31, 1-12.
- Owens, L., Shute, R., & Slee, P. (2000). I'm in and you're out . . . Explanations for teenage girls' indirect aggression. *Psychology, Evolution and Gender*, 2, 19-46.
- Pardini, D. A., White, H. R., & Stouthamer-Loeber, M. (2007). Early adolescent psychopathology as a predictor of alcohol use disorders by young adulthood. *Drug and Alcohol Dependence*, 88S, S38-S49.
- Parker, H., & Williams, L. (2003). Intoxicated weekends: young adults' work hard- play hard lifestyles, public health and public disorder. *Drugs: Education, prevention and policy*, 10, 345-367.
- Patterson, G. (1982). *Coercive Family Processes*: Castalia Publishing Company
- Pellegrini, A. D., & Long, J. D. (2002). A longitudinal study of bullying, dominance, and victimization during the transition from primary school through secondary school. *British Journal of Developmental Psychology*, 20, 259-280.
- Pepler, D., Craig, W., Connolly, J., Yuile, A., McMaster, L., & Jiang, D. (2006). A developmental perspective on bullying. *Aggressive Behavior*, 32, 376-384.
- Pepler, D., Jiang, D., Craig, W., & Connolly, J. (2008). Developmental trajectories of bullying and associated factors. *Child Development*, 79, 325-338.
- Pettit, G. S., Yu, T., Dodge, K. A., & Bates, J. E. (2009). A developmental process analysis of cross-generational continuity in educational attainment. *Merrill-Palmer Quarterly*, 55, 250-284.
- Piquero, A., Brame, R., Mazerolle, P., & Haapanen, R. (2002). Crime in emerging adulthood. *Criminology*, 40, 137-169.
- Piquero, A., Brezina, T., & Turner, M. G. (2005). Testing Moffitt's account of delinquency abstinence. *Journal of Research in Crime and Delinquency*, 42, 27-54.
- Preacher, K. J., & Hayes, A. F. (2008). Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behavior Research Methods*, 40, 879-891.
- Preacher, K. J., Rucker, D. D., & Hayes, A. F. (2007). Addressing moderated mediation hypotheses: Theory, methods, and prescriptions. *Multivariate Behavioral Research*, 42, 185-227.

- Pulkkinen, L. (1987). Offensive and defensive aggression in humans: A longitudinal perspective. *Aggressive Behavior*, 13, 197-212.
- Pulkkinen, L. (1995). Behavioral precursors to accidents and resulting physical impairment. *Child Development*, 66, 1660-1679.
- Pulkkinen, L. (2006). The Jyväskylä Longitudinal Study of Personality and Social Development (JYLS). In L. Pulkkinen, J. Kaprio & R. J. Rose (Eds.), *Socioemotional Development and Health from Adolescence to Adulthood* (pp. 29-55). New York: Cambridge University Press.
- Pulkkinen, L., & Pitkänen, T. (1993). Continuities in aggressive behavior from childhood to adolescence. *Aggressive Behavior*, 19, 249-263.
- Rayner, C., & Höel, H. (1997). A summary review of literature relating to workplace bullying. *Journal of Community & Applied Social Psychology*, 7, 181-191.
- Rigby, K. (1996). *Bullying in Schools : And What To Do About It*. Melbourne, Vic.: Australian Council for Educational Research.
- Rigby, K. (1998). The relationship between reported health and involvement in bully victim problems among male and female secondary school students. *Journal of Health Psychology*, 3, 465-476.
- Rigby, K. (2002a). *A meta-analysis of methods and approaches to reducing bullying in pre-schools and early primary school in Australia*. Canberra: Commonwealth Attorney-General's Department, Crime Prevention Branch.
- Rigby, K. (2002b). *New Perspectives on Bullying*. London: Jessica Kingsely Publishers.
- Rigby, K., & Slee, P. (1993). Dimensions of interpersonal relation among Australian children and implications for psychological well-being. *The Journal of Social Psychology*, 133, 33-42.
- Roberts, B. W., Caspi, A., & Moffitt, T. E. (2003). Work experiences and personality development in young adulthood. *Journal of Personality and Social Psychology*, 84, 582-593.
- Roberts, B. W., Harms, P. D., Caspi, A., & Moffitt, T. E. (2007). Predicting the counterproductive employee in a child-to-adult prospective study. *Journal of Applied Psychology*, 92, 1427-1436.
- Robins, L. N. (1978). Sturdy childhood predictors of adult antisocial behaviour: replications from longitudinal studies. *Psychological Medicine*, 8, 611-622.
- Roche, K. M., Ensminger, M. E., Ialongo, N., Poduska, J. M., & Kellam, S. G. (2006). Early entries into adult roles: Associations with aggressive behavior from early adolescence into young adulthood. *Youth and Society*, 38, 236-261.
- Roeser, R. W., Eccles, J. S., & Sameroff, A. J. (1998). Academic and emotional functioning in early adolescence: Longitudinal relations, patterns, and prediction by experience in middle school. *Development and Psychopathology*, 10, 321-352.
- Roisman, G., Aguilar, B., & Egeland, B. (2004). Antisocial behavior in the transition to adulthood: The independent and interactive roles of developmental history and emerging developmental tasks. *Development and Psychopathology*, 16, 857-871.
- Roland, E., & Idsøe, T. (2001). Aggression and bullying. *Aggressive Behavior*, 27, 446-462.
- Rothman, S. (2005). Post-school education and training pathways to age 20, *LSAY Briefing Number 12*. Melbourne: Australian Council for Educational Research (ACER).
- Rothman, S., & Hillman, K. (2008). *X, Y and Z: Three decades of education, employment and social outcomes of Australian youth*. Paper presented at the

- Australian Council for Educational Research (ACER) research conference 2008: Touching the Future: Building skills for life and work.
- Rutter, M. (1987). Psychosocial resilience and protective mechanisms. *American Journal of Orthopsychiatry*, 57, 316-331.
- Rutter, M. (1994). Beyond longitudinal data: Causes, consequences, changes, and continuity. *Journal of Consulting and Clinical Psychology*, 62, 928-940.
- Rutter, M. (1996). Transitions and turning points in developmental psychopathology: As applied to the age span between childhood and mid-adulthood. *International Journal of Behavioral Development*, 19, 603-626.
- Rutter, M. (2003). Commentary: Causal processes leading to antisocial behavior. *Developmental Psychology*, 39, 372-378.
- Rutter, M., Kim-Cohen, J., & Maughan, B. (2006). Continuities and discontinuities in psychopathology between childhood and adult life. *Journal of Child Psychology and Psychiatry*, 47, 276-295.
- Salmivalli, C., Lappalainen, M., & Lagerspetz, K. M. J. (1998). Stability and change of behavior in connection with bullying in schools: A two-year follow-up. *Aggressive Behavior*, 24, 205-218.
- Salmivalli, C., & Nieminen, E. (2002). Proactive and reactive aggression among school bullies, victims, and bully-victims. *Aggressive Behavior*, 28, 30-44.
- Sameroff, A. (2000a). Developmental systems and psychopathology. *Development and Psychopathology*, 12, 297-312.
- Sameroff, A. J. (1989). Models of developmental regulation: The envirotpe. In D. Cicchetti (Ed.), *The emergence of a discipline: Rochester Symposium of Developmental Psychopathology* (Vol. 1, pp. 41-68). Hillsdale, NJ: Erlbaum.
- Sameroff, A. J. (2000b). Dialectical processes in developmental psychopathology. In A. J. Sameroff, M. Lewis & S. M. Miller (Eds.), *Handbook of Developmental Psychopathology* (2nd ed., pp. 23-38). New York: Kluwer Academic/Plenum Publishers.
- Sameroff, A. J., & MacKenzie, M. J. (2003). Research strategies for capturing transactional models of development: The limits of the possible. *Development and Psychopathology*, 15, 613-640.
- Sampson, R., & Laub, J. (2005a). A general age-graded theory of crime: Lessons learned and the future of life-course criminology. In D. P. Farrington (Ed.), *Advances in Criminological Theory: Testing integrated developmental/life course theories of offending* (Vol. 13).
- Sampson, R., & Laub, J. (2005b). A life-course view of the development of crime. *The Annals of the American Academy of Political and Social Science*, 602, 12-45.
- Sampson, R., & Laub, J. (2005c). When prediction fails: From crime-prone boys to heterogeneity in adulthood. *The Annals of the American Academy of Political and Social Science*, 602, 73-79.
- Sampson, R. J., & Laub, J. H. (1993). *Crime in the making: Pathways and turning points through life*. Cambridge, MA: Harvard University Press.
- Sanford, M., Offord, D., McLeod, K., Boyle, M., Byrne, C., & Hall, B. (1994). Pathways into the work force: Antecedents of school and work force status. *Journal of the American Academy of Child and Adolescent Psychiatry*, 33, 1036-1046.
- Schäfer, M., Korn, S., Brodbeck, F., Wolke, D., & Schulz, H. (2005). Bullying roles in changing contexts: The stability of victim and bully roles from primary school to secondary school. *International Journal of Behavioral Development*, 29, 323-335.

- Scheff, T. J. (1988). Shame and conformity: The deference-emotion system. *American Sociological Review*, 53, 395-406.
- Scheff, T. J. (2000). Shame and the social bond: A sociological theory. *Sociological Theory*, 18, 84-99.
- Scholte, R. H. J., Engels, R. C. M. E., Overbeek, G., de Kemp, R. A. T., & Haselager, G. J. T. (2007). Stability in bullying and victimization and its association with social adjustment in childhood and adolescence. *Journal of Abnormal Child Psychology*, 35, 217-228.
- Schulenberg, J., Bachman, J. G., O'Malley, P. M., & Johnston, L. D. (1994). High school educational success and subsequent substance use: A panel analysis following adolescents into young adulthood. *Journal of Health and Social Behavior*, 35, 45-62.
- Schulenberg, J., Bryant, A., & O'Malley, P. (2004). Taking hold of some kind of life: How developmental tasks relate to trajectories of well-being during the transition to young adulthood. *Development and Psychopathology*, 16, 1119-1139.
- Schulenberg, J., & Jennifer, M. (2001). A developmental perspective on alcohol and other drug use during adolescence and the transition to young adulthood, *Monitoring the Future Occasional Paper 51*. Ann Arbor: Institute for Social Research, University of Michigan.
- Schulenberg, J., Maggs, J., & O'Malley, P. (2003). How and why the understanding of developmental continuity and discontinuity is important: The sample case of long-term consequences of adolescent substance use. In J. Mortimer & M. Shanahan (Eds.), *Handbook of the Life Course* (pp. 391-411). New York: Kluwer Academic/Plenum Publishers.
- Schulenberg, J., Sameroff, A., & Cicchetti, D. (2004). The transition to adulthood as a critical juncture in the course of psychopathology and mental health. *Development and Psychopathology*, 16.
- Schulenberg, J., Wadsworth, K., O'Malley, P., Bachman, J., & Johnston, L. (1996). Adolescent risk factors for binge drinking during the transition to young adulthood: Variable- and pattern-centred approaches to change. *Developmental Psychology*, 32, 659-674.
- Schulenberg, J. E., & Maggs, J. L. (2008). Destiny matters: distal developmental influences on adult alcohol use and abuse. *Addiction*, 103, 1-6.
- Schwartz, D., Dodge, K., Pettit, G., & Bates, J. (2000). Friendship as a moderating factor in the pathway between early harsh home environment and later victimization in the peer group. *Developmental Psychology*, 36, 640-662.
- Scott, W. R. (2001). *Institutions and organizations*. Thousand Oaks, London: Sage.
- Sherrod, L. R., Haggerty, R. J., & Featherman, D. L. (1993). Introduction: Late adolescence and the transition to adulthood. *Journal of Research on Adolescence*, 3, 217-226.
- Shrout, P. E., & Bolger, N. (2002). Mediation in experimental and nonexperimental studies: New procedures and recommendations. *Psychological Methods*, 7, 422-445.
- Sirin, S. R. (2005). Socioeconomic status and academic achievement: A meta-analytic review of research. *Review of Educational Research*, 75, 417-453.
- Slee, P. (1995). Peer victimization and its relationship to depression among Australian primary school students. *Personality and Individual Differences*, 18, 57-62.
- Slee, P. T., & Rigby, K. (1993). The relationship of Eysenck's personality factors and self-esteem to bully-victim behaviour in Australian schoolboys. *Personality and Individual Differences*, 14, 371-373.

- Smith, P. K. (2004). Bullying: Recent developments. *Child and Adolescent Mental Health, 9*, 98-103.
- Smith, P. K., Madsen, K. C., & Moodey, J. C. (1999). What causes the age decline in reports of being bullied at school? Towards a developmental analysis of risks of being bullied. *Educational Research, 41*, 267-285.
- Smith, P. K., Talamelli, L., Cowie, H., Naylor, P., & Chauhan, P. (2004). Profiles of non-victims, escaped victims, continuing victims and new victims of school bullying. *British Journal of Educational Psychology, 47*, 565-581.
- Solberg, M. E., & Olweus, D. (2003). Prevalence estimation for school bullying with the Olweus Bully/Victim Questionnaire. *Aggressive Behavior, 29*, 239-268.
- Sourander, A., Helstelä, L., Helenius, H., & Piha, J. (2000). Persistence of bullying from childhood to adolescence: A longitudinal 8-year follow-up study. *Child Abuse and Neglect, 24*, 873-881.
- Sourander, A., Jensen, P., Rönning, J. A., Elonheimo, H., Niemelä, S., Helenius, H., et al. (2007). Childhood bullies and victims and their risk of criminality in late adolescence. *Archives of Pediatric adolescent medicine, 161*, 546-552.
- Sourander, A., Jensen, P., Rönning, J. A., Niemelä, S., Helenius, H., Sillanmaki, L., et al. (2007). What is the early adulthood outcome of boys who bully or are bullied in childhood? The Finnish "From a Boy to a Man" study. *Pediatrics, 120*, 397-404.
- Stanger, C., Achenbach, T. M., & Verhulst, F. C. (1997). Accelerated longitudinal comparisons of aggressive versus delinquent syndromes. *Development and Psychopathology, 9*, 43-58.
- Stattin, H., & Magnusson, D. (1989). The role of early aggressive behavior in the frequency, seriousness, and types of later crime. *Journal of Consulting and Clinical Psychology, 57*, 710-718.
- Stein, J. A., Dukes, R. L., & Warren, J. I. (2006). Adolescent male bullies, victims and bully-victims: A comparison of psychosocial and behavioral characteristics. *Journal of Pediatric Psychology, 32*, 273-282.
- Steinberg, L., & Cauffman, E. (1996). Maturity of judgement in adolescence: Psychosocial factors in adolescent decision making. *Law and Human Behavior, 20*, 249-272.
- Steinberg, L., Fegley, S., & Dornbusch, S. M. (1993). Negative impact of part-time work on adolescent adjustment: Evidence from a longitudinal study. *Developmental Psychology, 29*, 171-180.
- Steinberg, L., & Morris, A. (2001). Adolescent development. *Annual Review of Psychology, 52*, 82-110.
- Stoolmiller, M., & Blechman, E. A. (2005). Substance use is a robust predictor of adolescent recidivism. *Criminal Justice and Behavior, 32*, 302-328.
- Stouthamer-Loeber, M., Wei, E., Loeber, R., & Masten, A. (2004). Desistance from persistent serious delinquency in the transition to adulthood. *Development and Psychopathology, 16*, 897-918.
- Sweet, R. (2008). *Round and round or fully rounded? How can we improve youth transitions?* Paper presented at the Australian Council for Educational Research (ACER) research conference 2008 : Touching the Future: Building skills for life and work.
- Tabachnick, B., & Fidell, L. (2007). *Using Multivariate Statistics* (5 ed.). Boston: Pearson Education Inc.
- Tajfel, H. (1972). La categorization sociale (English translation). In S. Moscovici (Ed.), *Introduction a la psychologie sociale*. Paris: Larousse.

- Tangney, J. (1992). Proneness to shame, proneness to guilt, and psychopathology. *Journal of Abnormal Psychology, 101*, 469-478.
- Tangney, J., Wagner, P. E., Hill-Barlow, D., Marschall, D. E., & Gramzow, R. (1996). Relation of shame and guilt to constructive versus destructive responses to anger across the lifespan. *Journal of Personality and Social Psychology, 70*, 797-809.
- Tangney, J. P. (1990). Assessing individual differences in proneness to shame and guilt: Development of the self-conscious affect and attribution inventory. *Journal of Personality and Social Psychology, 59*, 102-111.
- Tangney, J. P., Wagner, P., Fletcher, C., & Gramzow, R. (1992). Shamed into anger? The relation of shame and guilt to anger and self-reported aggression. *Journal of Personality and Social Psychology, 62*, 669-675.
- Tanner, J. L. (2006). Recentering during emerging adulthood: A critical turning point in life span human development. In J. J. Arnett & J. L. Tanner (Eds.), *Emerging adults in America: Coming of age in the 21st century* (pp. 21-55). Washington, DC: American Psychological Association.
- Terranova, A. M., Morris, A. S., & Boxer, P. (2008). Fear reactivity and effortful control in overt and relational bullying: a six-month longitudinal study. *Aggressive Behavior, 34*, 104-115.
- Thornberry, T. P., Lizotte, A. J., Krohn, M. D., Smith, C. A., & Porter, P. K. (2003). Causes and consequences of delinquency: Findings from the Rochester Youth Development Study. In T. P. Thornberry & M. D. Krohn (Eds.), *Taking Stock of Delinquency: An Overview of Findings from Contemporary Longitudinal Studies* (pp. 11-42). New York: Kluwer Academic/Plenum Publishers.
- Tremblay, R. (2002). Development of physical aggression from early childhood to adulthood. In R. Tremblay, R. Barr & R. Peters (Eds.), *Encyclopedia on Early Childhood Development* (pp. 1-6). Montreal: Centre of Excellence for Early Childhood Development.
- Tremblay, R. E. (2000). The development of aggressive behaviour during childhood: What have we learned in the past century? *International Journal of Behavioral Development, 24*, 129-141.
- Tremblay, R. E., McCord, J., Boileau, H., Charlebois, P., Gagnon, C., LeBlanc, M., et al. (1991). Can disruptive boys be helped to become competent? *Psychiatry, 54*, 148-161.
- Tremblay, R. E., Vitaro, F., Nagin, D., Pagani, L., & Seguin, J. R. (2003). The Montreal Longitudinal and Experimental Study: Rediscovering the power of descriptions. In T. P. Thornberry & M. D. Krohn (Eds.), *Taking stock of delinquency: An overview of findings from contemporary longitudinal studies* (pp. 205-254). New York: Kluwer/Plenum.
- Tyler, T. R., & Blader, S. (2000). *Cooperation in groups: Procedural justice, social identity, and behavioral engagement*. Philadelphia: Psychology Press.
- Uggen, C. (2000). Work as a turning point in the life course of criminals: A duration model of age, employment, and recidivism. *American Sociological Review, 67*, 529-546.
- Vaillancourt, T., McDougall, P., Hymel, S., Krygsman, A., Miller, J. L., Stiver, K., et al. (2008). Bullying: Are researchers and children/youth talking about the same thing? *International Journal of Behavioral Development, 32*, 486-495.
- Vassallo, S., Smart, D., Sanson, A., Dusseyer, I., McKendry, B., Toumbourou, J., et al. (2002). *Patterns and precursors of adolescent antisocial behaviour First report*. Melbourne: Crime Prevention Victoria.

- Verhulst, F. C., & Althaus, M. (1988). Persistence and change in behavioral/emotional problems reported by parents of children aged 4-14: An epidemiological study. *Acta Psychiatrica Scandinavica*, 77, suppl. no. 339.
- Verhulst, F. C., & Van der Ende, J. (1991). Four-year follow-up of teacher-reported problem behaviors. *Psychological Medicine*, 21, 965-977.
- Vitaro, F., Boivin, M., & Tremblay, R. E. (2007). Peers and violence: a two-sided developmental perspective. In D. J. Flannery, A. T. Vazsonyi & I. D. Waldman (Eds.), *The Cambridge Handbook of Violent Behaviour and Aggression* (pp. 361-387). Cambridge: Cambridge University Press.
- Voelkl, K. E., & Frone, M. R. (2000). Predictors of substance use at school among high school students. *Journal of Educational Psychology*, 92, 583-592.
- Welsh, M., Parke, R. D., Widaman, K., & O'Neil, R. (2001). Links between children's social and academic competence: A longitudinal analysis. *Journal of School Psychology*, 39, 463-481.
- West, S. G., Aiken, L. S., & Krull, J. L. (1996). Experimental personality designs: Analyzing categorical by continuous variable interactions. *Journal of Personality*, 64, 1-48.
- White, H. R., Labouvie, E. W., & Papadaratsakis, V. (2005). Changes in substance use during the transition to adulthood: A comparison of college students and their non-college peers. *The Journal of Drug Issues*, 35, 281-305.
- White, H. R., Loeber, R., & Farrington, D. P. (2008). Substance use, drug dealing, gang membership, and gun carrying and their predictive associations with serious violence and serious theft. In R. Loeber, M. Stouthamer-Loeber, D. P. Farrington & H. R. White (Eds.), *Violence and Serious Theft: Development and Prediction from Childhood to Adulthood* (pp. 137-166). New York: Routledge.
- White, J. L., Moffitt, T. E., Caspi, A., Bartusch, D. J., Needles, D. J., & Stouthamer-Loeber, M. (1994). Measuring Impulsivity and Examining Its Relationship to Delinquency. *Journal of Abnormal Psychology*, 103, 192-205.
- White, R., & Wyn, J. (2004). *Youth and Society: Exploring the dynamics of youth experience*. Melbourne: Oxford University Press.
- Wiesner, M., Kim, H. D., & Capaldi, D. M. (2005). Developmental trajectories of offending: Validation and prediction to young adult alcohol use, drug use, and depressive symptoms. *Development and Psychopathology*, 17, 251-270.
- Wikström, P.-O. H. (1985). *Everyday violence in contemporary Sweden*. Stockholm: National Council for Crime Prevention.
- Wilson, D. (2004). The interface of school climate and school connectedness and relationships with aggression and victimisation. *Journal of School Health*, 74, 293-299.
- Woodward, L. J., Fergusson, D. M., & Horwood, L. J. (2002). Romantic relationships of young people with childhood and adolescent onset antisocial behavior problems. *Journal of Abnormal Child Psychology*, 30, 231-243.
- Zucker, R. A. (2008). Anticipating problem alcohol use developmentally from childhood into middle adulthood: what have we learned? *Addiction*, 103 (Suppl. 1), 100-108.

APPENDIX A: MEASURES

Time 1 and Time 2 measures

Bullying (Time 1 and Time 2)

Children read the definition of bullying and responded to the two questions that follow. The bullying scales at Time 1 and Time 2 were the mean of the children's responses to each item. The upper three response options were collapsed before items were averaged, and the resulting scores coded to create a scale with minimum of 0 and a maximum of 2.

'We call it bullying when someone repeatedly hurts or frightens someone weaker than themselves on purpose. Remember that it is not bullying when two young people of about the same strength have the odd fight or quarrel. Bullying can be done in different ways: by hurtful teasing, threatening actions or gestures, name-calling or hitting or kicking.'

1. How often have you been part of a group that bullied someone during the last year?

(Response format: (1) I haven't been part of a group that bullied anyone (2) It has happened once or twice (3) Sometimes (4) About once a week (5) Several times a week

2. How often have you, on your own, bullied another child during the last year?

(Response format: (1) I haven't, on my own, bullied anyone during the last year (2) It has happened once or twice (3) Sometimes (4) About once a week (5) Several times a week

Shame management

The measure of shame management was based on four scenarios in which children were asked to imagine themselves in the role of a bully. After reading each scenario, children responded to questions that asked how they would feel in that situation. The questions were identical for each scenario. Shame acknowledgement was assessed with four items at Time 1 and five items at Time 2. Shame displacement was assessed with five items at both Time 1 and Time 2. With four hypothetical scenarios, this resulted in a pool of 36 (40) responses, 16 (20) pertaining to acknowledgement and 20 (20) pertaining to displacement (Time 1, Time 2).

All responses were reverse scored such that a 'yes' response to acknowledgement questions indicated a tendency to acknowledge, and a 'yes' response to displacement questions a tendency to displace.

Overall acknowledgement and displacement scales were formed as follows. In the first step, responses to each 'matching' question were averaged across the four scenarios. For example, a child's four responses to the same question 'Would you feel ashamed of yourself?' were averaged. This resulted in 9 (10) subscales for each component of shame management: 4 (5) for acknowledgement, and 5 (5) for displacement. In the second step, scores on the 4 (5) acknowledgement subscales were averaged to create an overall acknowledgement scale, and scores on the 5 (5) displacement subscales averaged to create an overall displacement scale. Psychometric analyses for Time 1 and Time 2 may be found in Appendix B.

Scenarios

'Introduction: 'In this section, we are going to ask about how you feel when you do something wrong. Remember that everyone sometimes does things that they normally wouldn't do.

Here are some situations that do not usually happen, but happen sometimes. As you read each story, try to imagine yourself in that situation. Then indicate your feelings in that situation. Please answer the questions by putting a tick in the 'Yes' or 'No' box following the question. There are no right or wrong answers to these questions.

Here is an example: 'Imagine that you are in the playground during lunchtime. You hit a student from your class for no good reason. You then realise that your class teacher saw what you did.

'Would you feel ashamed of yourself?' ☐ Yes ☒ No

In this example, 'No' has been ticked by a student who would not feel ashamed of him/herself. A student who thinks that he/she would feel ashamed of him/herself would tick 'Yes'.

1. Imagine that you are walking along the corridor at school and you see another student. You put your foot out and trip the student. Then you realise that the class teacher has just come into the corridor and saw what you did.

2. Imagine that you have been making rude comments about a student's family. Then you realise that the class teacher heard what you said.

3. Imagine that a younger student is going to the canteen to buy something. You grab his/her money and warn the student not to tell or else. Then you realise that the class teacher saw you and heard what you said.

4. Imagine that you are left in the classroom alone with a student. You think that the teacher has gone so you start teasing the student. Then you realise that the teacher is still in the room.

Shame acknowledgement items:

1. Would you feel ashamed of yourself?
2. Would you wish you could just hide?
3. Would you feel like blaming yourself for what happened?
4. Would you feel like making the situation better?
- 5.* Would you feel angry at yourself in this situation? (T2 only)

Shame displacement items:

1. Would you feel like blaming others for what happened?
2. Would you be unable to decide if you were to blame?
3. *Would you feel angry in this situation? (Time 1)
3. *Would you feel angry at the student in this situation? (Time 2)
4. Would you feel like getting back at that student?
5. Would you feel like doing something else, for example, throwing or kicking something?

Impulsivity (Time 1 only)

The impulsivity measure was the mean of the following three items, minimum =1, maximum= 4.

Q: In this section, you will be given some statements which describe certain feelings that you have about yourself. Please read each sentence carefully and think about yourself.

1. I often get involved in things I later wish I could get out of
2. I often get into trouble because I do things without thinking
3. I often do and say things without stopping to think

(Response format: (1) Disagree a lot (2) disagree a bit (3) agree a bit (4) agree a lot)

School adjustment

Academic difficulties (Time 1 and Time 2)

Perceived academic difficulties was an index of the next three items, minimum = 1, maximum =3.

Q: Below is a list of hassles that children may have in their lives. Please indicate how often you have to deal with these hassles

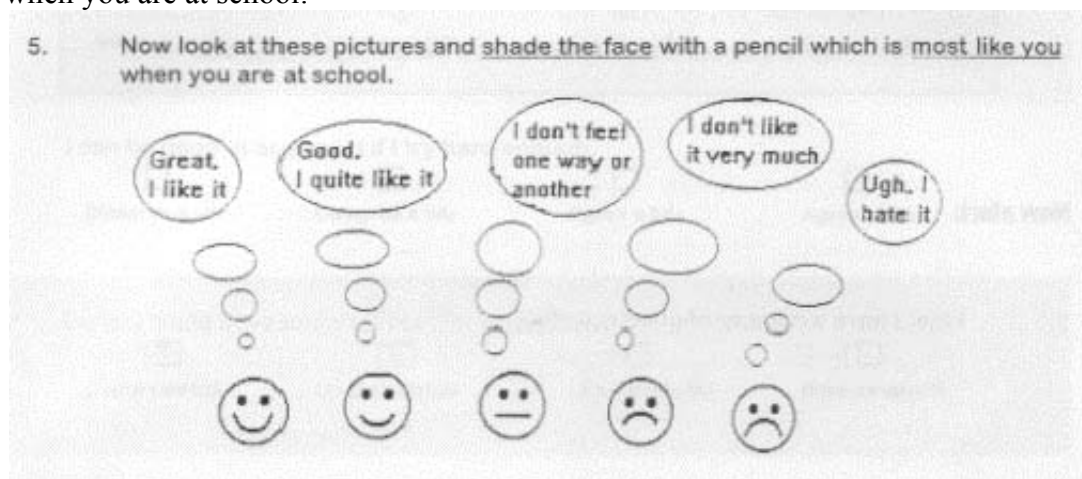
1. Failing a test or exam
2. Doing worse in some schoolwork than expected
3. Failing to do my homework

(Response format: (1) never (2) sometimes (3) a lot of time)

Liking for school (Time 1)

The liking for school scale is the response to the following item, with a minimum score of 1 and a maximum score of 5. Responses were reverse scored such that higher scores represent greater liking for school.

Q: Look at these pictures and shade the face with a pencil which most like you when you are at school:



School connectedness (Time 2)

School connectedness in high school is an index of the next set of items, minimum= 1, maximum = 4.

Q: Please think about how you feel about yourself at school.

1. I really like being a student at my school
2. I feel very satisfied going to school each day
3. Going to school makes me very happy

4. I feel very proud of being a student at my school
 5. I feel valued and respected as a student at my school
 6. What my school expects is clear to me
 7. I often speak proudly about being a student at my school
- (Response format: (1) Disagree a lot (2) disagree a bit (3) agree a bit (4) agree a lot)

Time 3 measures

Physical aggression

The physical aggression outcome measure was based on participants' reports of perpetrating physical assault, threats of violence, and being involved in fights, in the last 12 months. Items were as follows. Each item was dichotomised into 'never' versus all other responses. For fights, this was done by dichotomising the result into those who had not been involved in a fight with anyone vs. those who had been involved in a fight at least once with at least one of the people listed. The index for physical aggression created was the sum of the three dichotomised items, with a minimum score of 0 and a maximum score of 3.

1. Thinking back over the last 12 months, how often, if at all, have you attacked someone to physically hurt them? For example, by hitting, kicking, pushing? This does not include incidents where you got into a fight with another person and you hit each other.

2. Thinking back over the last 12 months, how often, if at all, have you threatened to hurt someone physically?

3. Thinking back over the last 12 months, how often, if at all, have you been involved in a fight with each of the following people?

- i. Someone at work
- ii. A family member
- iii. A friend/s
- iv. My partner
- v. Someone when I was out at night
- vi. Someone else

(Response format, all items: (1) never (2) once (3) twice (4) three times or more)

Institutional role status

At Time 3, participants responded to a number of questions about work and study. The following items were used to categorise participants into employment-oriented (coded 0) and university-oriented (coded 1) roles as described in Chapter 4.

Work items

1. Do you consider yourself mainly as:

- i. A worker
- ii. A student

2. Are you working for money at the moment?

- i. Working in a full-time job
- ii. Working in a part-time job
- iii. Working in a casual job
- iv. Not working but looking for work
- v. Not working for money

3. About how many paid hours do you work in a typical week? (open-ended response)

Study items

1. Have you undertaken any post-secondary/tertiary study or training? (yes/no)
2. Have you completed a post-secondary/tertiary course?
 - i. No
 - ii. Yes, I have completed a course at TAFE/CIT
 - iii. Yes, I have completed an apprenticeship
 - iv. Yes, I have completed a degree at university
3. Are you studying at the moment?
 - i. No
 - ii. Yes, I am studying at TAFE/CIT (full-time/part-time)
 - iii. Yes, I am doing an apprenticeship (full-time/part-time)
 - iv. Yes, I am studying at university (full-time/part-time)

Drinking frequency

Drinking frequency was measured with the following single item. Responses were reverse scored such that higher scores reflected more frequent drinking. The minimum score was 1 and the maximum score was 7.

Q: In the last 12 months, how often did you have an alcoholic drink of any kind?

(Response format: (1) every day (2) 5 to 6 days a week (3) 3 to 4 days a week (4) 1 to 2 days a week (5) 2 to 3 days a month (6) about 1 day a month (7) less often)

Parent's education

Parent education information was gathered at Time 1.

Q: What is the highest level of education you have completed?

1. Never went to school
2. Completed primary
3. Some secondary
4. Completed secondary
5. Some further education beyond secondary school
6. University degree
7. Other (please specify)

APPENDIX B: PSYCHOMETRIC PROPERTIES SHAME MANAGEMENT SCALES

The MOSS-SASD at Time 1

Despite the earlier findings, it was possible that the factor structure and internal consistency would be weakened with the smaller sample used in the current analyses. Psychometric analyses for the Time 1 measure were therefore conducted with the current sample of 151 in order to confirm earlier reports. The first step was to examine the consistency of responses to the four acknowledgement and five displacement items across the four different scenarios. Results revealed that the individual sub-scale items were highly correlated across scenarios. The alpha reliability coefficients for the four sub-scales that formed the acknowledgement index ranged from .82 to .92 with a median of .87. For the displacement sub-scales, coefficients ranged from .77 to .92, with a median of .88. These results are very similar to the coefficients reported by Ahmed (2001) for the full Time 1 sample, and show that children who, for example, report feeling ashamed in one situation are also likely to do so in the other situations.

Intercorrelations between the nine shame management subscales are shown in Table B1. Based on earlier findings and theoretical considerations, it was expected that the four acknowledgement subscales would be significantly and positively correlated, as would the five displacement sub-scales. This was confirmed. It was also expected that any correlations between acknowledgement and displacement sub-scales would be negative. Although there were fewer significant associations between the acknowledgement and displacement sub-scales, those that did emerge were mostly in the expected direction. Two exceptions occurred for the displacement scale 'feeling angry', which was positively correlated with the acknowledgement scales 'feeling shame' and 'wanting to hide.' This, however, is consistent with the pattern of results for the Time 1 sample.

Finally, factor analysis was used to confirm the structure of the shame management measure. Principal factors extraction was used rather than principal components extraction. In contrast to principal components analysis, which extracts factors based on the total variance available in the dataset, common factor analysis analyses only the variance that is shared amongst items. Common factor analysis was chosen because the goal of the analysis was to confirm the presence of a hypothesised factor structure, rather than explore the data to generate new scales.

Assumptions for factorability were met, as indicated by a significant score for Bartlett's test of sphericity ($\chi^2(36) = 297.84, p < .001$) and a score greater than 0.6 for Kaiser's test of sampling adequacy ($KMO = .72$). As expected, two components with eigenvalues greater than 1 emerged, accounting for 39% of the shared variance amongst the nine subscales. The first factor accounted for 21% of this variance and was defined by the five displacement sub-scales. The four acknowledgement sub-scales loaded on the second factor, which accounted for 18% of the covariance amongst subscales. Factor loadings for the sub-scales are shown in Table B2.

These analyses confirm that the presence of distinct overall indices of acknowledgement and displacement for the current dataset. The subscales were therefore averaged to create the acknowledgement and displacement indices. Internal consistency coefficients for both indices were acceptable (acknowledgement $\alpha = .69$; displacement $\alpha = .72$). Means and standard deviations may be found in Table 4.3.

Table B1: Time 1 shame management sub-scale intercorrelations

Acknowledgement	1	2	3	4	5	6	7	8
1. Feel shame	-							
2. Hide self	.34**	-						
3. Blame self	.39**	.20**	-					
4. Make amends	.51**	.23**	.48*	-				
Displacement								
5. Blame others	.10	.14	-.23**	-.13	-			
6. Unsure blame	.09	.09	-.10	-.06	.48**	-		
7. Feel angry	.17*	.27**	.07	.05	.25**	.33**	-	
8. Retaliate	-.08	.06	-.21**	-.20*	.41**	.39**	.31**	-
9. Throw or kick something	-.02	.14	-.04	-.07	.21**	.30**	.27**	.49**

Table B2: Factor loadings Time 1 MOSS-SASD

	Factor 1 Displacement	Factor 2 Acknowledgement
Feel shame	.09	.71
Blame self	-.18	.61
Make amends	-.11	.73
Feel like hiding	.23	.41
Feel angry	.49	.21
Blame others	.61	-.05
Uncertain who to blame	.63	.6
Feel like retaliating	.71	-.18
Feel like throwing/kicking s/t	.52	-.02
<i>Eigenvalues</i>	2.50	2.20
<i>% Covariance</i>	20.98%	18.33%

The MOSS-SASD at Time 2

Morrison (2006) and Ahmed (2006) present psychometric properties of the MOSS-SASD scales for the full Time 2 sample. Consistent with the Time 1 data, the acknowledgement and displacement scales were shown to exhibit high internal consistency. Scale structure and reliability for the current sample were explored following the same procedures as used at Time 1. Responses to the ten items (five acknowledgement items and five displacement items) were consistent across scenarios. Reliability coefficients for the five sub-scales that formed the acknowledgement index ranged from .73 to .87, with a median of .83. Coefficients for the five displacement sub-scales ranged from .69 to .83, with a median of .82. These results show that at Time 2, children were likely to report similar shame management responses across the four scenarios.

Intercorrelations between the ten Time 2 shame management subscales are shown in Table B3. As at Time 1, the acknowledgement subscales were positively correlated, as were the displacement subscales. In contrast to Time 1, there were a number of significant negative correlations between the acknowledgement and displacement subscales. The strongest cross-subscale associations were for the acknowledgement scales ‘feeling shame’, ‘blaming self’ and ‘making amends’, which

were negatively correlated with most of the displacement subscales. The correlations supported the separation of the anger item into an adaptive response within the acknowledgement subscale ('Would you feel angry at yourself?'), and a maladaptive response within the displacement subscale ('Would you feel angry at the student?'). The adaptive anger response was positively related to other acknowledgement items, and mostly uncorrelated, or negatively correlated, with displacement items. On the other hand, the maladaptive response was positively related to the other displacement items, and negatively correlated with most of the acknowledgement items.

Considering the pattern of intercorrelations, it was expected that a common factor analysis would support the presence of distinct acknowledgement and displacement factors. As expected, the analysis (Bartlett $\chi^2(45) = 473.91, p < .001$; KMO = .80) yielded two factors with eigenvalues greater than 1, accounting for 45% of the shared variance. The acknowledgement subscales loaded on the first factor, which accounted for 25% of the covariance, and the displacement subscales on the second, accounting for 20% covariance. Factor loadings for the ten subscales are shown in Table B4.

On the basis of these analyses, subscales were averaged to form overall Time 2 indices of acknowledgement and displacement. Reliability coefficients (acknowledgement $\alpha = .83$; displacement $\alpha = .72$) were comparable to values reported by Ahmed (2006) and Morrison (2006 #347). Means and standard deviations may be found in Table 4.3 (Chapter 4).

Table B3: Time 2 shame management sub-scale intercorrelations

Acknowledgement	1	2	3	4	5	6	7	8	9
1. Feel shame	-								
2. Hide self	.50**	-							
3. Blame self	.59**	.38**	-						
4. Make amends	.55**	.30**	.46**	-					
5. Anger at self	.67**	.47**	.58**	.43**	-				
Displacement									
6. Blame others	-.17*	.06	-.27**	-.13	-.04	-			
7. Unsure blame	-.14	.06	-.21*	-.03	-.04	.42**	-		
8. Feel angry at the student	-.23**	.06	-.27**	-.17*	-.07	.51**	.22**	-	
9. Retaliate	-.39**	-.10	-.34**	-.20*	-.24*	.49**	.21**	.50**	-
10. Throw or kick something	-.13	.09	-.06	-.10	-.03	.23**	.18*	.32**	.35**

Table B4: Factor loadings Time 2 MOSS-SASD

	Factor 1	Factor 2
	Acknowledgement	Displacement
Feel shame	.85	-.21
Blame self	.78	-.03
Anger at self	.78	-.03
Make amends	.56	-.17
Feel like hiding	.60	.14
Feel angry at the student	-.09	.70
Blame others	-.04	.74
Uncertain who to blame	-.04	.41
Feel like retaliating	-.27	.65
Feel like throwing/kicking s/t	-.02	.42
<i>Eigenvalues</i>	<i>3.49</i>	<i>2.05</i>
<i>% Covariance</i>	<i>25.63%</i>	<i>19.78%</i>

APPENDIX C: TABLES

Table C5.4: Regression examining the effect of Time 2 changes in shame management and school adjustment for the prediction of Time 2 bullying

	Model 1				Model 2				Model 3				<i>r</i>
	B	<i>sr</i> ²	95% CI for B		B	<i>sr</i> ²	95% CI for B		B	<i>sr</i> ²	95% CI for B		
Sex ¹	.11	.007	-.09	.32	.10	.004	-.12	.30	.06	.001	-.14	.25	.23**
Parent education ²	-.16	.015	-.35	.03	-.14	.011	-.33	.06	-.12	.008	-.30	.06	-.14
<i>Time 1 measures</i>													
Impulsivity	.15*	.023	.01	.29	.15*	.024	.01	.29	.11	.014	.01	.24	.31***
Academic difficulties	.13	.005	-.14	.40	.03	.000	-.30	.32	-.18	.002	-.18	.36	.17*
Liking for school	-.07	.007	-.19	.05	-.03	.001	-.16	.09	-.10	.000	-.10	.14	-.24**
Displacement	.35	.012	-.12	.83	.35	.011	-.13	.83	-.11	.001	-.59	.38	.25**
Acknowledgement	-.46	.019	-.94	.03	-.41	.015	-.89	.08	-.25	.005	-.71	.22	-.23**
Bullying	.12	.010	-.05	.29	.11	.009	-.06	.29	.16	.017	-.01	.32	.31***
<i>Time 2 measures</i>													
Academic difficulties					.17	.010	-.08	.43	.12	.004	-.12	.36	.26**
School connectedness					-.10	.009	-.27	.06	-.02	.000	-.18	.14	-.22**
Displacement									.89**	.042	.30	1.47	.33***
Acknowledgement									-.74***	.054	-1.16	-.31	-.45***
Δ <i>R</i> ²	.21***				.02				.11***				
<i>Full model R</i> ² = .36***													

****p* < .001. ***p* < .01. **p* < .05 †Standardised regression coefficients. *sr*² = squared semi – partial correlation. ¹ male = 1. ² university = 1

Table C6.3: Regression predicting adult (Time 3) physical aggression from adolescent (Time 1) impulsivity, school adjustment, shame management and bullying

	Model 1				Model 2				Model 3				<i>r</i>
	95% CI for B				95% CI for B				95% CI for B				
	B	<i>sr</i> ²	Lower	Upper	B	<i>sr</i> ²	Lower	Upper	B	<i>sr</i> ²	Lower	Upper	
Sex ¹	.67***	.139	.41	.92	.61***	.111	.35	.87	.60***	.106	.34	.87	.43***
Parent education ²	.01	.000	-.23	.26	.01	.000	-.23	.26	-.01	.000	-.25	.23	-.02
<i>Time 1 measures</i>													
Impulsivity	.11	.008	-.06	.28	.08	.004	-.10	.25	.04	.001	-.14	.22	.21**
Academic difficulties	.31	.017	-.03	.65	.25	.011	-.09	.59	.25	.011	-.09	.58	.16*
Liking for school	-.09	.008	-.24	.06	-.07	.005	-.23	.08	-.05	.002	-.20	.09	-.24**
Displacement					.54	.019	-.02	1.11	.30	.005	-.30	.91	.24**
Acknowledgement					-.27	.004	-.89	.34	-.14	.010	-.75	.48	-.19*
Bullying									.24	.024	.02	.46	.34***
Δ <i>R</i> ²	.24***				.02				.023*				
<i>Full model R</i> ² = .28***													

****p* < .001. ***p* < .01. **p* < .05 † *p* = .06. *sr*² = squared semi – partial correlations. ¹ male = 1. ² university = 1

Table C6.4: Regression predicting adult (Time 3) physical aggression from adolescent (Time 2) school adjustment, shame management and bullying

	Model 1				Model 2				Model 3				
	95% CI for B				95% CI for B				95% CI for B				<i>r</i>
	B	<i>sr</i> ²	Lower	Upper	B	<i>sr</i> ²	Lower	Upper	B	<i>sr</i> ²	Lower	Upper	
Sex ¹	.67***	.144	.42	.93	.59***	.104	.33	.85	.56***	.092	.30	.81	.43***
Parent education ²	.02	.000	-.23	.37	.03	.000	-.21	.28	.06	.001	-.18	.30	-.02
<i>Time 2 measures</i>													
Academic difficulties	.27	.018	-.02	.56	.21	.010	-.08	.50	.16	.006	-.13	.45	.16*
School connectedness	-.14	.011	-.34	.05	-.05	.001	-.26	.17	-.04	.001	-.25	.17	-.26**
Displacement					.19	.001	-.55	.94	-.03	.000	-1.05	.11	.11
Acknowledgement					-.67*	.029	-1.13	-.11	-.47	.013	-.79	.73	-.37***
Bullying									.25*	.025	.03	.47	.35***
ΔR^2	.23***				.03*				.03*				
<i>Full model $R^2 = .28$***</i>													

*** $p < .001$. ** $p < .01$. * $p < .05$. [†]. *sr*² = squared semi – partial correlations. ¹ male = 1. ² university = 1

Table C6.5: Regression predicting adult (Time 3) physical aggression from bully trajectory group, and measures of socio-emotional functioning from both childhood and adolescence

	Model 1					Model 2					Model 3					<i>r</i>
	B	β	95% CI		<i>sr</i> ²	B	β	95% CI		<i>sr</i> ²	B	β	95% CI		<i>sr</i> ²	
Sex ¹	.73***	.43	.48	.98	.188	.62***	.37	.36	.87	.121	.53***	.32	.26	.81	.076	.43***
Parent education ²	-.005	-.003	-.25	.24	.000	-.01	-.00	-.25	.24	.000	.02	.01	-.24	.27	.000	-.02
<i>Bully trajectory group T1-T2³</i>																
Child-limited						.21	.09	-.13	.54	.008	.09	.04	-.27	.44	.001	.04
Adolescent-onset						.16	.07	-.19	.51	.004	-.08	-.03	-.46	.31	.001	.04
Persistent						.51**	.22	.14	.87	.040	.17	.07	-.26	.60	.003	.29***
<i>Time 1 measures</i>																
Impulsivity											.06	.05	-.12	.24	.002	.21**
Academic difficulties											.23	.10	-.15	.61	.008	.16*
Liking for school											-.01	-.00	-.17	.16	.000	-.24**
Displacement											.35	.09	-.33	1.02	.000	.24**
Acknowledgement											-.03	-.01	-.67	.61	.005	-.19*
<i>Time 2 measures</i>																
Academic difficulties											.05	.02	-.29	.38	.001	.16*
School connectedness											-.05	-.04	-.28	.17	.001	-.26**
Displacement											-.01	-.00	-.34	.82	.000	.11
Acknowledgement											-.60*	-.19	-1.21	.01	.020	-.37***
ΔR^2	.19***					.04*					.06					
<i>Full model $R^2 = .27***$</i>																

***p< .001. **p< .01. *p< .05. ¹ male = 1. ² university = 1. ³ reference group= non-bullies

Table C7.1A: Summary of regression predicting adult (T3) drinking frequency from child (T1) school adjustment, shame management and bullying

	Step 1			Step 2			Step 3			Step 4			Step 5								
	B	95% CI for B		<i>sr</i> ²	B	95% CI for B		<i>sr</i> ²	B	95% CI for B		<i>sr</i> ²	B	95% CI for B		<i>sr</i> ²	<i>r</i>				
Sex ¹	.86***	.41	1.31	.088	.80**	.34	1.25	.073	.68**	.21	1.14	.05	.61*	.13	1.10	.037	.61*	.12	1.1	.037	.29***
Parent education ²	.33	-.11	.78	.013	.38	-.07	.83	.017	.33	-.12	.78	.013	.33	-.12	.78	.013	.33	-.13	.78	.012	.11
<i>Time 1 predictors</i>																					
Impulsivity					.22	-.09	.53	.012	.19	-.12	.52	.008	.15	-.17	.47	.005	.14	-.19	.47	.004	.14
Academic difficulties									-.22	-.84	.40	.003	-.30	-.92	.33	.005	-.30	-.93	.33	.005	-.02
Liking for school									-.27*	-.54	.001	.023	-.25	-.53	.03	.019	-.25	-.53	.04	.018	-.24**
Displacement													.77	-.27	1.82	.013	.70	-.42	1.83	.009	.16
Acknowledgement													-.31	-1.43	.81	.002	-.27	-1.42	.89	.001	-.15
Bullying																	.07	-.34	.48	.001	.18*
Δ <i>R</i> ²	.10***				.01				.02				.01				.001				
<i>Full model R</i> ² = .15**																					

***p< .001. **p< .01. *p< .05. ¹ male = 1. ² university = 1.

Table C7.2: Regression predicting adult (Time 3) drinking frequency from sex, bully trajectory group and adolescent (Time 2) acknowledgement

	Step 1				Step 2				Step 3				<i>r</i>
	B	95% CI for B		<i>sr</i> ²	B	95% CI for B		<i>sr</i> ²	B	95% CI for B		<i>sr</i> ²	
Sex ¹	.86***	.41	1.31	.088	.69**	.22	1.15	.051	.49*	.022	.95	.024	.29***
Parental education ²	.33	-.11	.78	.013	.33	-.12	.78	.013	.33	-.10	.77	.013	.11
<i>Bully trajectory group</i>													
<i>T1-T2</i> [†]													
Child-limited					.29	-.32	.90	.005	.26	-.33	.85	.004	.03
Adolescent-onset					.26	-.38	.91	.004	-.06	-.71	.58	.000	.01
Persistent					.77*	.10	1.44	.031	.38	-.30	1.06	.007	.24**
Acknowledgement T2									-1.67***	-2.62	-.72	.067	-.38***
ΔR^2	.09***				.03				.07**				
<i>Full model R</i> ² = .19***													

****p* < .001. ***p* < .01. **p* < .05 [†] reference group = non-bullies. ¹ male = 1. ² university = 1

Table C7.1B: Summary of regression predicting adult (Time 3) drinking frequency from adolescent (Time 2) school adjustment, shame management and bullying

	Step 1			Step 2			Step 3			Step 4							
	B	95% CI for B		<i>sr</i> ²	B	95% CI for B		<i>sr</i> ²	B	95% CI for B		<i>sr</i> ²	B	95% CI for B		<i>sr</i> ²	<i>r</i>
Sex ¹	.86***	.41	1.31	.088	.75**	.59	1.21	.060	.54*	.07	1.00	.029	.52*	.05	.99	.027	.29***
Parent education ²	.33	-.11	.78	.013	.32	-.12	.78	.012	.35	-.08	.79	.014	.36	-.07	.80	.015	.11
<i>Time 2 predictors</i>																	
Academic difficulties					.07	-.46	.60	.000	-.09	-.62	.43	.000	-.12	-.65	.41	.001	.03
School connectedness					-.28	-.64	.07	.015	-.03	-.41	.35	.000	-.03	-.41	.35	.000	-.22**
Displacement									.43	-.91	1.76	.002	.32	-1.06	1.71	.001	.11
Acknowledgement									1.70***	2.71	-.69	.063	1.61**	-2.67	-.55	.051	.38***
Bullying													.11	-.29	.51	.002	.21**
Δ <i>R</i> ²	.10***				.02				.07**			.002	.07**			.002	
Full model <i>R</i> ² =	.19**																

***p< .001. **p< .01. *p< .05. ¹ male = 1. ² university = 1.

Table C7.3: Regression predicting adolescent shame acknowledgement from Time 1 measures and Time 2 school adjustment

	Step 1				Step 2				
	B	<i>sr</i> ²	95% CI for B		B	<i>sr</i> ²	95% CI for B		<i>r</i>
Sex ¹	-.09	.027	-.17	-.02	-.06	.011	-.14	.02	-.34***
Parent education ²	.02	.003	-.04	.10	.02	.002	-.05	.09	.04
<i>Time 1 predictors</i>									
Impulsivity	-.02	.003	-.07	.03	-.03	.004	-.07	.03	-.18*
Academic difficulties	.003	.00	-.10	.11	.05	.005	-.05	.16	-.09
Liking for school	.08***	.065	.04	.13	.05*	.021	.00	.09	.41***
Displacement	-.21*	.025	-.39	-.02	-.23*	.030	-.41	-.06	.34***
Acknowledgement	.28**	.043	.09	.47	.22*	.025	.04	.40	-.21*
Bullying	.03	.003	-.04	.10	.03	.003	-.04	.09	-.18*
<i>Time 2 predictors</i>									
Academic difficulties					-.05	.005	-.14	.04	-.21*
School connectedness					.13***	.082	.07	.19	.48***
Δ <i>R</i> ²	.003								
Full model <i>R</i> ² = .38***									

***p< .001. **p< .01. *p< .05. ¹ male = 1. ² university = 1.

Table C8.1A: Summary of logistic regression predicting adult (Time 3) institutional role from adolescent (Time 2) school adjustment, shame management and bullying

	Model 1				Model 2				Model 3				Model 4			
Nagelkerke R^2	.15				.20				.21				.21			
	B	SE	Odds ratio	95% CI	B	SE	Odds ratio	95% CI	B	SE	Odds ratio	95% CI	B	SE	Odds ratio	95% CI
Sex ¹	-.88*	.35	.41	.82- .20	-.95*	.38	.39	.82 - .18	-.84*	.39	.43	.94- .20	-.87*	.40	.42	.92 - .19
Parent education ²	1.18**	.35	3.25	1.62- 6.50	1.08**	.36	2.96	1.45 - 6.03	1.08**	.67	2.94	1.44 - 6.03	1.11**	.37	3.02	1.46 - 6.24
Academic difficulties					-1.07*	.45	.34	.14 - . 83	-1.02*	.46	.36	.15 - .89	-1.06*	.47	.35	.14 - .86
School connectedness					-.07	.29	.93	.53 - 1.65	-.24	.32	.79	.42 - 1.48	-.23	.32	.79	.42 - 1.49
Acknowledgement									.21	1.14	1.23	.13 - 11.56	-.005	.91	3.65	.62 - 21.64
Displacement									1.11	.86	3.03	.56 - 16.46	1.29	1.18	1.00	.10 - 10.23
Bullying													.23	.34	.50	.65 - 2.45

***p< .001. **p< .01. *p< .05. ¹ male = 1. ² university = 1.

Table C8.2: Summary of logistic regression predicting adult (T3) institutional role from child (T1) school adjustment, shame management and bullying

	Model 1				Model 2				Model 3			
Nagelkerke R^2	.15				.22				.24			
	B	SE	Odds ratio	95% CI	B	SE	Odds ratio	95% CI	B	SE	Odds ratio	95% CI
Sex ¹	-.88*	.35	.41	.82 - .20	-.70	.37	.50	1.0- .24	-.68	.38	.50	1.0 - .24
Parent education ²	1.18**	.35	3.25	1.62- 6.50	1.09**	.37	2.97	1.45-6.10	1.12**	.37	3.07	1.48- 6.35
Impulsivity					-.77**	.26	.46	.28- .76	-.72**	.26	.49	.29- .82
Academic difficulties									-.59	.52	.55	.20 – 1.5
Liking for school									-.13	.22	.87	.57- 1.35
Displacement												
Acknowledgement												
Bullying												

(cont.)

	Model 4				Model 5			
Nagelkerke R^2	.25				.25			
	B	SE	Odds ratio	95% CI	B	SE	Odds ratio	95% CI
Sex	-.81*	.39	.45	.97 - .20	-.81*	.40	.45	.97 - .20
Parent education	1.11**	.37	3.04	1.46-6.33	1.13**	.38	3.10	1.48-6.48
Impulsivity	-.76**	.28	.47	.27-.80	-.74**	.28	.48	.28-.82
Academic difficulties	-.67	.53	.51	.18-1.42	-.67	.53	.51	.18-1.42
Liking for school	-.19	.23	.83	.53-1.31	-.17	.23	.84	.53-1.33
Displacement	-.88	.92	.41	.07-2.53	-.99	.95	.37	.06-2.42
Acknowledgement	.79	.87	2.2	.41-12.06	.97	.95	2.64	.41-16.81
Bullying					-.16	.35	.85	.43-1.69

***p< .001. **p< .01. *p< .05. ¹ male = 1. ² university = 1.

Table C8.3: Regression predicting Time 2 academic difficulties from child (Time 1) measures

	Step 1				Step 2				Step 3				Step 4				<i>r</i>
	B	95% CI for B	<i>sr</i> ²		B	95% CI for B	<i>sr</i> ²		B	95% CI for B	<i>sr</i> ²		B	95% CI for B	<i>sr</i> ²		
Sex ¹	-.00	-.14 .14	.000		-.05	-.17 .08	.003		-.06	-.19 .07	.004		-.06	-.19 .07	.004		.01
Parent education ²	-.13	-.27 .01	.023		-.12	-.25 .00	.020		-.12	-.25 .00	.019		-.13	-.25 -.00	.021		-.15
Impulsivity					.04	-.05 .12	.003		.02	-.07 .11	.001		.01	-.07 .10	.000		.17*
Academic difficulties					.46	.29 .64	.148		.44	.27 .62	.032		.44	.27 .62	.131		.45***
Liking for school					-.09	-.17 -.02	.032		-.09	-.17 -.02	.029		-.08	-.17 -.01	.026		-.25**
Acknowledgement									.24	-.05 .52	.014		.18	-.12 .49	.007		-.05
Displacement									-.02	-.32 .29	.000		.01	-.30 .33	.000		.22*
Bullying													.05	-.06 .16	.004		.20*
ΔR^2	.02				.24**				.01				.004				
Full model $R^2 = .28***$																	

****p* < .001. ***p* < .01. **p* < .05. ¹ male = 1. ² university = 1.