

Mental Health Literacy for Bulimic-Type Eating Disorders: The Role of Self-Recognition

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Declaration

This is to certify that:

- I. The work presented in this thesis towards the Doctor of Psychology (Clinical) is, to the best of my knowledge and belief, original except as acknowledged in the text.
- II. I hereby declare that I have not submitted this material, either in full or in part, for a degree at this or any other institution.
- III. The thesis is less than 40,000 words in length, exclusive of tables and bibliographies.

KG Sarll

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October 2014



Preface and Author Contribution

All components of this thesis are based on the original work of the author, with the exception of some components that require acknowledgement.

For the first study presented in this thesis, *“Self-Recognition of Eating-Disordered Behaviour in College Women: Further Evidence of Poor Eating Disorders “Mental Health Literacy”*, the author conceived of the study aims and hypotheses, completed the data analysis, interpreted the results and prepared the manuscript for submission. The data featured in this study was based on data from the article of Mond, J. M., Hay, P. J., Paxton, S. J., Rodgers, B., Darby, A., Nillson, J., Quirk, F., & Owen, C. (2010). Eating disorders "mental health literacy" in low risk, high risk and symptomatic women: Implications for health promotion programs. *Eating Disorders: The Journal of Treatment & Prevention*, 18, 267-285. doi: 10.1080/10640266.2010.490115. This research was supported by a mental health project grant from the Australian Rotary Health Research Fund.

For the second study, *“Poor self-recognition of disordered eating among girls with bulimic-type eating disorders: Cause for concern?”*, the author conceived of the study, assisted with recruitment of the sample, data collection and data entry. In addition to this, the author formulated the study aims and hypotheses, completed the data analysis, interpreted the results and prepared the manuscript for submission.

The research practicum presented in the Appendix of this thesis, *“Improving Eating Disorders Mental Health Literacy: A preliminary evaluation of the “Should I Say Something?” workshop”*, was conceived and designed by the author. The author was also responsible for the recruitment of the sample, the development of the study aims and hypotheses, the data collection, entry and analysis, interpretation of the results and the preparation of the manuscript for submission.

The workshop “Should I Say Something?” which was evaluated for the research practicum included in this dissertation, was created by Dr Laura Hart and colleagues (2012), and was presented under Licenced Agreement by the author.

The journal articles that are presented in this dissertation feature the author as the primary investigator in each incidence. However, it is important to identify the other authors of each paper, as listed below.

- 1) Gratwick-Sarll, K., Mond, J.M., & Hay, P.J. (2013). Self-Recognition of Eating-Disordered Behaviour in College Women: Further Evidence of Poor Eating Disorders “Mental Health Literacy”? *Eating Disorders: The Journal of Treatment & Prevention*, 21, 310-327. doi: 10.1080/10640266.2013.797321
- 2) Gratwick-Sarll, K., Bentley, C., Harrison, C., & Mond, J.M. (2014). Poor self-recognition of disordered eating among girls with bulimic-type eating disorders: Cause for concern? *Early Intervention in Psychiatry*. doi: 10.1111/eip.12168
- 3) Gratwick-Sarll, K., & Bentley, C. (2014). Improving Eating Disorders Mental Health Literacy: A preliminary evaluation of the “Should I Say Something?” workshop. *Eating Disorders: The Journal of Treatment & Prevention*, 22, 405-419. doi:10.1080/10640266.2014.925764

Overview

This thesis is comprised of a general introduction and a series of manuscripts that are summarised by a general discussion. In addition to this, a research practicum can be found in the appendix.

The general introduction of this thesis will be broken down into three chapters; exploring the nature of bulimic-type eating disorders; the treatment for bulimic-type disorders and associated help-seeking behaviours; and eating disorders mental health literacy including the role of self-recognition.

Chapters four and five are in the form of two journal articles. Study one aimed to explore self-recognition of eating disordered behaviours amongst those who reported significant levels of eating disordered pathology and behaviours in a young adult population. Study two aimed to build upon the first study, and explored self-recognition in an adolescent population. Specifically, the two articles aimed to explore the variables associated with self-recognition of an eating problem and whether such recognition would be independently associated with help-seeking behaviour.

Chapter six summarises the main conclusions, limitations and future directions from the two studies included in this dissertation. Lastly, the appendix entails a research practicum exploring an early intervention program designed to improve eating disorders mental health literacy.

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I would like to acknowledge the immense amount of support and assistance provided by my primary supervisor, Jonathan Mond. Your patience, encouragement and dedication were helpful beyond measure. The tireless hours that you have invested into this whole process was above and beyond what I could have ever expected. I would also like to express my gratitude to Kate Reynolds. I have always been inspired by your passion and drive, and feel incredibly grateful to have been a recipient of your generosity and support over the past five years.

It is also necessary to express my gratitude to my other supervisors, namely Phillipa Hay and Richard O’Kearney, for their input and guidance. The helpful suggestions and recommendations were greatly appreciated. I would also like to acknowledge Laura Hart for her support with the “Should I Say Something?” intervention, and for the ongoing guidance that was provided on numerous occasions.

I would like to thank my parents for their ongoing love, support and encouragement. I am also grateful to my peers who were a constant source of inspiration and fun, and to my friends who supported me with kind words of optimism and reassurance. I am thankful to those who read my thesis and for their helpful suggestions.

Last but certainly not least, Simon, not only am I grateful to you for reading countless drafts, but your love, humour and encouragement throughout this thesis, the whole degree, and beyond, has been more than what anyone could ever ask for.

Abstract

*"When you know better you do better."
— Maya Angelou*

Despite the availability of effective treatments for bulimic-type eating disorders, especially when help is sought early on, individuals with these disorders often delay seeking treatment. Amongst other barriers that account for poor treatment seeking, one hypothesis is that individuals experiencing bulimic-type eating disorders may be poor at recognising that their eating behaviours are problematic.

To determine whether and to what extent poor self-recognition of bulimic-type symptoms occurs, and the possible factors associated with poor self-recognition, two studies were conducted in sub-groups of individuals with bulimic-type eating disorders recruited from population-based samples. The first study explored self-recognition amongst female university students ($n=756$), who completed self-report measures of eating disorder and comorbid pathology, as well as help-seeking. A sub-group of participants with bulimic eating disorders ($n=94$) were identified, and self-recognition was assessed through the use of a vignette that featured a fictional character with symptoms of bulimia nervosa. The main findings were that (i) self-recognition was poor, with just over half (52.1%) of the participants reporting that they currently had a problem with their eating; (ii) self-induced vomiting was the only variable independently associated with self-recognition; and (iii) participants who recognised a problem with their eating were more likely to have sought treatment for an eating or weight problem. These findings suggested that young women with eating disorder symptoms who are not engaging in self-induced vomiting may be particularly unlikely to recognise a problem with their eating and that this may reduce the likelihood of early, appropriate treatment being received.

The second study investigated self-recognition of disordered eating amongst female adolescents with bulimic-type eating disorders ($n=139$) using the same methodology. In this study, as in the first study: (i) self-recognition was poor, with more than half of participants (58%) reporting that they did not currently have a problem with

their eating; (ii) self-induced vomiting was strongly and independently associated with self-recognition; and (iii) participants who recognised a problem with their eating were more likely to have sought treatment for an eating or weight problem. Impairment in emotional wellbeing was also strongly associated with self-recognition in this study. Again, these findings suggested that self-recognition of disordered eating may be poor among young women with bulimic-type eating disorders, particularly those who do not engage in self-induced vomiting, and that that this may be a barrier to help-seeking.

Taken together, the outcomes of these two studies indicated that improving self-recognition of bulimic-type eating disorders amongst adolescent and young adult women may strengthen early intervention and relevant health promotion programs. There may be a need to improve self-recognition and other aspects of eating disorders mental health literacy relating to bulimic-type eating disorders, not only amongst individuals with symptoms but also with whom they interact and the community as a whole.

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Chapter One

Introduction to Bulimic-Type Eating Disorders

1.1. Bulimic-Type Eating Disorders

A broad spectrum of eating and weight control behaviours exist in contemporary Australian society (Falk, Sobal, Bisogni, Connors, & Devine, 2001). At one end of this spectrum, eating and weight control behaviours that occur in moderation are deemed to be “normative”, whereas at the other end individuals with extreme eating and weight control behaviours may be deemed to have an eating disorder. An individual may be considered to have an eating disorder when they exhibit extreme eating and/or weight control behaviours in conjunction with low self-worth (Fairburn, Cooper, & Shafran, 2003). The transdiagnostic model of eating disorders suggests that individuals attempt to improve their self-worth through means that are deemed controllable, thereby leading the individual to engage in strict and rigid eating behaviours (Fairburn et al., 2003). This maladaptive self-evaluation system excludes other domains of a person’s self-worth, leading to an undue influence of the importance of weight and body shape on self-evaluation being perpetuated (Fairburn, 2001). This diagnostic picture is characteristic of bulimic-type eating disorders, namely, bulimia nervosa, binge eating disorder and sub-threshold variants of these classifications, and eating disorders more generally (Goldschmidt et al., 2010).

The defining features of bulimic-type eating disorders, pertaining to bulimia nervosa, binge eating disorder and variants of these disorders, are extreme concerns about (“overvaluation” of) weight or shape accompanied by recurrent episodes of binge eating and/or extreme weight-control behaviours (APA, 2013; Mond, 2013). Extreme weight-control behaviours include self-induced vomiting, diuretics, and laxative misuse (“purging”), as well as non-purging forms of weight control, namely, extreme dietary restriction and excessive exercise. Bulimia nervosa is characterised by binge eating and extreme weight-control behaviours, whereas binge eating disorder is characterised by binge eating in the absence of extreme weight-control behaviours. Similarities exist with respect to levels of body dissatisfaction and shape/weight concerns for both bulimia nervosa and binge eating disorder (Latner & Clyne, 2008). A third bulimic-type

eating disorder, “purging” (or “compensatory”) disorder is characterised by extreme weight-control behaviours in the absence of regular binge eating episodes. Individuals with this disorder often report recurrent episodes of subjective binge eating, namely, episodes of perceived overeating in which a loss of control over eating is experienced, but in which the amount of food consumed is not unusually large (Mond, 2013). Bulimia nervosa and binge eating disorder are formal diagnoses in the most recent, fifth revision of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) (APA, 2013), whereas purging disorder is included as an exemplar of the DSM-5 “Other Specified Feeding or Eating Disorder” category (Mond, 2013).

Bulimic-type eating disorders are ego-dystonic in their nature, in so far as the behaviours are deemed undesirable and change-worthy by the individual experiencing the disorder (Fairburn, 2001; Polivy & Herman, 2002). In contrast to anorexia nervosa, bulimic eating disorders are not commonly identified as mental health problems by lay people, despite comparatively higher prevalence and similarly high levels of distress and disability (Chiodo, Stanley, & Harvey, 1984; Mond & Arrighi, 2011, 2012; Murray, Touyz, & Beumont, 1990).

1.2. Age of Onset

Bulimic-type eating disorders typically have their onset late in adolescence or in early adulthood (Fairburn, 2001). Approximately half of the individuals who develop bulimia nervosa will do so before 18 years of age (Hudson, Hiripi, Pope, & Kessler, 2007). Binge eating disorder tends to exhibit a later age of onset, the median being approximately 21 years (Hudson et al., 2007). Importantly, from an early intervention perspective, approximately 20% of individuals who go on to develop an eating disorder will do so before the age of 16 years, particularly for bulimia nervosa (Favaro, Caregaro, Tenconi, Bosello, & Santonastaso, 2009).

1.3. Risk Factors

The factors that lead to an increase in risk for the development of bulimic-type eating disorders are seen to be informed by a biopsychosocial perspective of mental

health problems (Engel, 1977), in which genetic/biological predispositions, social and psychological factors interact to precipitate eating-disordered behaviour. This perspective suggests that numerous factors may increase the likelihood of development of a bulimic-type eating disorder.

From a biological perspective, research has suggested a genetic contribution is likely to increase an individual's risk of developing an eating disorder, especially if a first degree-relative experiences bulimia nervosa (APA, 2000; Polivy & Herman, 2002). However the significance of genetic input varies largely and it is likely that environmental factors play a more significant role as adolescents develop through puberty (Klump, McGue, & Iacono, 2003). Other biological factors, including a family history of psychiatric disorders (e.g. mood disorders), have been shown to predispose bulimic-type pathology (Fairburn, 2001). Connections have also been made with premorbid personality traits, such as obsessive-compulsive traits (Anderluh, Tchanturia, Rabe-Hesketh, & Treasure, 2003), perfectionistic tendencies leading to unrealistic personal standards (Hewitt & Flett, 1991; Lilenfeld et al., 2000), and heightened impulsivity (Ames-Frankel et al., 1992). Other personality variables, such as narcissism and neuroticism, have also been identified as potential precursors to eating disorder pathology (Cassin & von Ranson, 2005; Díaz-Marsá, Luis, & Sáiz, 2000; Lehoux, Steiger, & Jabalpurilawa, 2000; Narduzzi, 2000).

Psychological variables, namely, low self-esteem, affect dysregulation, body dissatisfaction and weight/shape preoccupation have been identified as key risk factors for bulimic-type eating disorders (Gowers & Shore, 2001; Lehoux et al., 2000; Vitousek & Manke, 1994; Wade, Bulik, Prescott, & Kendler, 2004). Additional psychological risk factors that overlap with social-environmental factors include childhood sexual abuse or neglect, teasing or bullying, familial pressure or eating concern, childhood or parental obesity, and internalisation of the "thin ideal" (Fairburn, 2001; Polivy & Herman, 2002; J. Thompson & Stice, 2001). Research also supports the role of dietary restriction as a significant risk factor. Patton, Selzer, Coffey, Carlin, and Wolfe (1999)

suggested that individuals who engage in severe dieting are up to 18 times more likely to develop an eating disorder within six months than those who do not diet, with almost one in five likely to develop an eating disorder over a 12-month period. It has been hypothesised that dieting promotes binge-eating behaviours due to caloric deprivation and the perceived violation of rules concerning dietary/caloric intake (Abbott et al., 1998; Lowe, 1994; Stice & Agras, 1998).

1.4. Prevalence

The estimated lifetime prevalence of bulimia nervosa for females is approximately 1.5%, and that of binge eating disorder approximately 3.0% (Hudson et al., 2007). These estimates are likely to be conservative, however, due to issues of non-response bias in epidemiological studies (Mond, Rodgers, Hay, Owen, & Beumont, 2004). These issues include over-representation of individuals with symptoms among non-respondents in general population surveys and denial and/or minimisation of symptoms among individuals with eating disorders who do participate (Hoek & Van Hoeken, 2003; Hudson et al., 2007; Mond, Rodgers, Hay, Owen, et al., 2004). Estimates of prevalence derived from treatment-seeking samples are of limited benefit given that only a minority of individuals with bulimic-type eating disorders receive treatment for an eating problem (see Chapter 2). Thus, figures of service use derived from inpatient and outpatient facilities may underestimate the true prevalence because presentation rates for treatment are poor. Research indicates that only 21.5%-26% specifically seek treatment for their eating disorder, with other figures suggesting it may be as low as 6% for individuals with bulimia nervosa (Fairburn, Cooper, Doll, Norman, & O'Connor, 2000; Hoek, 2006; Swanson, Crow, le Grange, Swendsen, & Merikangas, 2011).

In addition, prevalence figures reflect the prevailing diagnostic criteria. Diagnostic criteria for bulimia nervosa and binge eating disorder in the fourth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV; APA, 2000) were widely seen as being over-restrictive (e.g., the criterion that binge eating and/or

compensatory behaviours occurring at a frequency of, on average, at least twice a week for three months), hence the changes to such criteria in the recently published fifth revision of the Manual (DSM-5; APA, 2013; Mond, 2013). Due in part to these unduly strict criteria, a substantial proportion of individuals with clinically significant eating disorders - as many as two-thirds in some studies - were relegated to the DSM-IV residual category of Eating Disorder Not Otherwise Specified (EDNOS) and thereby largely not included in epidemiological reports (NEDC, 2012). It is thus reasonable to hypothesise that the prevalence of bulimic-type eating disorders will be found to be higher when using DSM-5 rather than DSM-IV diagnostic criteria, although evidence bearing on this hypothesis is currently limited (Mond, 2013).

The true prevalence of bulimic behaviours and disordered eating is assumed to be far greater, with findings from some recent studies suggesting that approximately 1 in 5 females will experience bulimia nervosa and an increasingly large number of males may be engaging in disordered eating behaviours (NEDC, 2012).

1.5. Burden of Disease

Bulimic-type eating disorders have significant physical, psychological, social and economic consequences. In Australia, bulimia nervosa considered to be the eighth largest cause of disease burden for females aged 15-24 years, in terms of years of life lost due to premature death and years of healthy life lost due to disability (Australian Institute of Health and Welfare, 2007; Begg et al., 2007). Although, estimates of disease burden associated with eating disorders are largely derived from the Australia Burden of Disease Study, which almost certainly underestimated the true extent of the problem due to the use of out-dated and/or otherwise inappropriate prevalence figures and/or disability weights (NEDC, 2012). Despite this, it is well recognised that individuals with bulimic-type eating disorders have markedly elevated levels of distress and impairment in role functioning (Mond, Owen, Hay, Rodgers, & Beumont, 2005; Mond, Rodgers, Hay, Korten, et al., 2004; Rieger, Wilfley, Stein, Marino, & Crow, 2005). Social disturbances in the form of lack of

interpersonal relationships or engagement in other interests are a particularly common consequence of bulimic-type eating disorder pathology (Agras, 2001; Mond & Hay, 2007). Furthermore, those not meeting formal diagnostic criteria for bulimia nervosa or binge eating disorder are found to have similarly high levels of comorbid psychopathology as those with a formal diagnosis (Mond, Hay, et al., 2006).

Physical complications associated with bulimic-type disorders span a broad spectrum and depend on the specific presentation. For those with binge eating disorder, risks are more likely to stem from being obese (Yanovski, 2003); individuals are at higher risk of developing diabetes, are more likely to have high blood pressure and high cholesterol levels, heart or gallbladder disease, and are more vulnerable to have certain types of cancers (Brown et al., 1996). For those with bulimia nervosa, common issues include dental problems, due to self-induced vomiting that leads to the erosion of enamel and periodontal disease, and gastrointestinal and oesophageal issues (Agras, 2001). In severe cases, dehydration and electrolyte imbalance can result in the increased risk of cardiac problems that may culminate in kidney failure and sudden death (Cooke & Sawyer, 2004; Uyeda, Tyler, Pinzon, & Birmingham, 2002). The estimated mortality rate for bulimia nervosa is not clearly established, with estimates ranging from 1.7% (Arcelus, Mitchell, Wales, & Nielsen, 2011) to 3.9% (Crow et al., 2009). Mortality rates for binge eating disorder are largely unavailable as, up until now, the disorder was assumed under the broader diagnosis of EDNOS, thereby not allowing for a clear distinction to be made in the data.

Bulimic-type eating disorders are strongly associated with comorbid mental health problems in the form of anxiety, affective and substance use disorders (Hudson et al., 2007). Emotional dysregulation and impulsivity issues are frequently experienced amongst those with bulimic-type disorders, even if there is a remission of the eating disorder (Keel, Mitchell, Miller, Davis, & Crow, 1999; Wilfley, Wilson, & Agras, 2003). Self-harm behaviours are also common amongst those with bulimic-type disorders, with approximately 25% of individuals engaging in non-suicidal self-

injury (Anderson, Carter, McIntosh, Joyce, & Bulik, 2002; Sansone & Levitt, 2002; Sansone & Sansone, 2002). Individuals who employ purging behaviours in order to control weight or shape are particularly likely to engage in suicidal behaviours (Bulik, Sullivan, & Joyce, 1999; Corcos et al., 2002; Favaro & Santonastaso, 1997; Lewinsohn, Striegel-Moore, & Seeley, 2000). Further, eating disorders have the highest suicide rate of all psychiatric conditions, with approximately 15-40% of individuals suffering from bulimia nervosa attempting suicide, and 23% of the bulimia nervosa mortality rate accounted for by suicide (Crow et al., 2009; Patton, 1988; Smink, van Hoeken, & Hoek, 2012).

Finally, whereas uptake of specialist treatment may be low among individuals with bulimic-type eating disorders, use of primary care services has been found to be markedly elevated among individuals with bulimic-type eating disorders on account of the high levels of distress, disability and medical complications associated with these disorders and co-morbid conditions. Between 1993-1994 in Australia, Vos et al. (2001) reported that the primary health care cost for bulimic-type disorders was estimated to be around \$3 million. In more recent times, based on a report by Deloitte Access Economics, The Butterfly Foundation (2012) estimated that the total socio-economic cost for eating disorders in Australia between 2011 - 2012 was \$69.7 billion. More specifically, in terms of costs related to bulimia nervosa during this period, The Butterfly Foundation's report estimated that the total health care system expenditure per capita, which included hospital in-patient services, out-of-hospital medical expenses, and prescription pharmaceuticals, was \$74 million. For "other eating disorders", including binge eating disorder and eating disorders not otherwise specified, the cost was \$18 million. The burden of disease for eating disorders, calculated on years lost due to disability and premature mortality, was estimated to be \$52.5 billion. In comparison, the burden of disease in 2012 for obesity was costed at \$52.9 billion, while the combined cost for anxiety and depression was \$41.2 billion (The Butterfly Foundation, 2012).

1.6. Summary

Bulimic-type eating disorders entail an overvaluation of the importance of weight or shape and recurrent episodes of binge eating and/or extreme weight-control behaviours. The age of onset for bulimic-type eating disorders is typically around late adolescence or early adulthood, with a conservative lifetime prevalence rate for these disorders of approximately 4.5% of the population. Predisposing factors stem from the biopsychosocial model, whereby biological, social and psychological factors are said to interact, leading to the development of eating-disordered behaviour. Bulimic-type eating disorders are associated with significant impairment in social, psychological, occupational, and physical functioning, as well as economic cost, constituting a serious health burden for both the individual and the community despite - or because of - low uptake of mental health care. Herein, there is a pressing need to develop health promotion and early intervention programs that will reduce this burden.

Chapter Two

Treatment of and Help-Seeking for Bulimic-Type Eating Disorders

2.1. Treatment of Bulimic-Type Eating Disorders

The therapeutic approach that has been found to be the most effective in treating bulimic-type disorders is Cognitive Behavioural Therapy (CBT) (Fairburn & Wilson, 1993; Hay, Bacaltchuk, Stefano, & Kashyap, 2009). CBT has been widely studied, and is currently recommended by the National Institute for Health and Clinical Excellence as the first line treatment for bulimia nervosa and binge eating disorder (NICE, 2004). In a large systematic review, Shapiro et al. (2007) indicated that CBT led to significant reductions in bingeing and purging behaviours, as well as higher proportions of individuals achieving remission and/or recovery. However, CBT was not associated with weight loss for binge eating disorder. As the definition of recovery tends to vary between studies, CBT has been estimated to be effective in 30-50% of cases, with further research required to increase recovery percentages (Rickwood, Deane, & Wilson, 2007). The updated version of CBT for bulimic-type eating disorders, known as Enhanced Cognitive Behavioural Therapy, has showed promising findings, with an approximate recovery rate of 45-60% (Fairburn et al., 2009).

Other treatments that have been endorsed for bulimic-type disorders include alternate psychological therapies, self-help programs and psychiatric intervention (NICE, 2004). In particular, Interpersonal Psychotherapy (IPT) has been found to be effective for bulimia nervosa, achieving similar rates of remission at a 1-year follow-up as CBT (Shapiro et al., 2007). Preliminary evidence of efficacy also exists for Dialectical Behaviour Therapy (DBT), with participants in one study demonstrating significant decreases in bingeing and purging episodes when compared to a waitlist control group (Safer, Telch, & Agras, 2001). Findings from a recent controlled trial indicated that CBT was more effective than psychodynamic psychotherapy, with regards to alleviating symptoms of bulimia nervosa (Poulsen et al., 2014). Some evidence exists for the use of guided self-help, which has been found to reduce objective binge and/or purge episodes for bulimic-type eating disorders, particularly in studies of bulimia nervosa (Brownley, Berkman, Sedway, Lohr, & Bulik, 2007; Shapiro et al., 2007). For adolescent populations, Family Based Therapy (FBT) has been found

to be more effective than supportive psychotherapy (leGrange, Crosby, Rathouz, & Leventhal, 2007), however FBT and CBT guided self-care show no significant differences in remission rates (Schmidt et al., 2007). Lastly, some psychotropic medications have been found to improve outcomes of treatment when used in conjunction with CBT, albeit it appears to be more effective when comorbid depression is present (Shapiro et al., 2007). Overall, evidence-based support for the use of CBT-E in the treatment of bulimic-type eating disorders is the strongest, suggesting that early intervention with this modality would be one way to reduce the health burden of these disorders.

2.2. Health Service Utilisation

Models of help-seeking suggest that numerous factors determine whether and what type of treatment may be sought among individuals with mental health problems and health problems more generally. Goldberg and Huxley's (1980) model of pathways to psychiatric care posits that an individual will pass through four filters to reach care. First, the individual must decide to seek help, presumably taking into account factors such as recognition that help is needed and/or available. Second, the disorder is recognised by a primary care provider such as a general practitioner. Third, referral to a mental health care provider is initiated. Finally, inpatient treatment may be required (Goldberg, 1995).

While Goldberg and Huxley's (1980) model is helpful in understanding the stages through which individuals may pass on their way to receiving specialist treatment, a more comprehensive model, that considers the factors influencing uptake of health services in greater detail, was developed by Andersen and Newman (1973). In this model, three broad types of variables, namely, predisposing factors, enabling factors and level of illness, are seen to determine health service use. Predisposing factors include demographic variables, such as age and sex; social structure variables, such as education, race and religion; and beliefs about the disease, including attitudes and knowledge. Enabling factors include social and community variables, such as access

to and availability of different services. Illness level refers to perceived and actual levels of symptomatology, disability and diagnosis (Andersen & Newman, 1973). In a revised version of the model, Andersen (1995) suggested that health education programs can assist in increasing the perceived need for care, an important factor in improving health service utilisation. Despite the availability of models to guide health service utilisation and the accessibility of effective treatments, uptake of mental health care has been found to be low among individuals with bulimic-type eating disorders.

The typical age of individuals presenting to treatment for a bulimic-type eating disorder is approximately 25 years implying that, on average, individuals tend to live with the disorder for some six years prior to obtaining help (Sullivan, 1995; NEDC, 2012). In a systematic review of health service utilisation, Hart, Granillo, Jorm, and Paxton (2011) found that only 17-31% of those with a diagnosable eating disorder receive appropriate treatment. Of the 14 studies that were included in the review, the unmet need for treatment was estimated to be somewhere between 67-83% of cases. Despite participants in these studies indicating that they believe in their need for treatment, a majority never sought treatment (Hart et al., 2011).

While there may be a desire to receive treatment among individuals with bulimic-type eating disorders, this does not appear to translate into early, appropriate help-seeking in many cases. Rather, individuals with bulimic-type eating disorders tend to utilise a broad range of interventions for a broad range of problems instead of seeking specialist care. These include “lifestyle interventions”, such as relaxation and meditation therapies, weight loss programs, or trying to find new hobbies, prior to seeking professional help (Mond, Hay, Rodgers, & Owen, 2007a). Other informal methods of seeking help often involve turning to their social network, namely friends and family members. Social networks appear to play a large role in help-seeking for individuals with bulimic-type disorders, especially amongst adolescent and young adult populations, with up to 86% of this cohort reporting that they would initially turn to a friend or parent in the event of experiencing such a problem (A. Becker, Thomas, Franko, & Herzog, 2005; Mond, Hay, et al., 2007a; Prouty, Protinsky, & Canady, 2002;

Vogel, Wade, Wester, Larson, & Hackler, 2007). Vogel et al. (2007) suggested that willingness to seek and engage in treatment among individuals with mental health problems may increase when those individuals are socially prompted to seek treatment and/or if they are aware of someone else who has sought treatment.

In many cases, the decision to seek specialist treatment may be motivated by issues other than the presence of disordered eating, such as wanting to achieve weight loss, the presence of comorbid mental health problems, or medical complications (Evans et al., 2011). Further, as is the case with mental health problems more generally, individuals with bulimic-type eating disorders are likely to seek specialist treatment only when levels of distress and disability become extreme (Hepworth & Paxton, 2007; Mond & Hay, 2007). This tendency was captured in a study conducted by Mond, Hay, et al. (2007a), who examined health service utilisation and factors associated with this in a community sample of 159 women with bulimic-type eating disorders. The researchers established that a minority of the participants had sought treatment from a mental health professional specifically for their eating disorder (40.3%), whereas a majority had sought advice about their weight (72.8%) and/or general mental health problems (74.2%). Of particular interest, among the participants who had not sought treatment for an eating disorder problem, yet reported high functional impairment as related to their eating disorder, 95.7% had sought treatment for a general mental health issue (67.4%) and/or a weight related issue (78.3%). Although high functional impairment was the best predictor of whether treatment was received, still only half of participants who reported severe impairment had received treatment for an eating problem, and less than one in five had received this treatment from a mental health professional. These findings highlight the need to identify barriers to treatment among individuals with bulimic-type eating disorders, and that the development of health promotion and early intervention programs to eliminate these barriers may improve uptake of evidence-based treatment.

2.3. Barriers to Help-seeking

Findings from several studies have shed light on likely barriers to treatment among individuals with bulimic-type eating disorders. One such study was conducted by Cachelin and Striegel-Moore (2006), who explored barriers to treatment among 145 women with primarily bulimic-type eating disorders, recruited from a community sample in the USA. Cachelin and Striegel-Moore (2006) found that only 28% of the sample sought treatment, despite 74% reporting awareness of the presence of an eating disorder and 69% expressing a desire to receive treatment for a problem. In this study, the primary barriers to help-seeking reported by participants were feelings of shame, not knowing where to seek help from, the belief that they should be able to help themselves, and the belief that their problem was not serious enough to warrant formal treatment. Hepworth and Paxton (2007) explored barriers to help-seeking in a sample of 63 women in Australia with current or past experiences of bulimic-type eating disorders. The researchers determined that after recognition of a problem, perceived stigma was a primary barrier to help-seeking, followed by poor knowledge of available treatments and perceived need for treatment, the experience of shame, fear of change and cost of treatment. As often found in the literature, severity of symptoms, impairment in functioning, distress and the desire to get better were factors that facilitated help-seeking.

Other commonly cited reasons for low and inappropriate service utilisation outlined in the literature include socio-demographic variables such as age, gender, ethnicity and income (A. Becker, Arrindell, Perloe, Fay, & Striegel-Moore, 2010; A. Becker et al., 2005; Cachelin, Rebeck, Veisel, & Striegel-Moore, 2001). Thus, older women, males, individuals of lower socio-economic status and/or ethnic minorities may all be less likely to seek treatment for an eating problem than young, affluent, Caucasian women. In addition to demographic variables, environmental factors such as geographical location tend to influence the availability of treatment (Hepworth & Paxton, 2007). Moreover, variables distinct to the individual such as knowledge and

beliefs concerning the nature of treatment of eating-disordered behaviour, level of insight, and perceived stigma associated with disclosure of mental health issues largely influence the process of treatment seeking (Hepworth & Paxton, 2007; Mond et al., 2009; Mond, Hay, et al., 2007a; Serpell & Treasure, 2002).

2.4. Summary

Currently, the uptake of evidence-based treatment among individuals with bulimic-type eating disorders remains low, with an average of six years between onset and seeking treatment. While there is some evidence to indicate that individuals with bulimic-type eating disorders have the desire to and are willing to seek help, it is often in relation to other problems, rather than their disordered eating and weight control behaviours. In addition to this, help is often sought from non-specialist treatment providers and/or self-help interventions, and mostly only when levels of distress and disability become extreme. Models of health service utilisation, such as Andersen and Newman's (1973) model, suggest that predisposing factors, such as demographic variables, social structure and beliefs; enabling factors, such as social and community variables; and level of illness factors, such as perceived and actual levels of symptomology, all need to be considered.

Additional barriers to treatment are likely to include limited access to services due to financial or geographical constraints, age and gender variables, along with individual barriers such as shame and perceived stigma. Further to these variables, poor recognition, lack of knowledge concerning symptoms, and poor awareness of available treatments for bulimic-type eating disorders, otherwise known as poor mental health literacy, all contribute to inappropriate health service utilisation.

Chapter Three

“Mental Health Literacy” for Bulimic-Type Eating Disorders and the Role of Self-Recognition

3.1. Eating Disorders “Mental Health Literacy”

Mental health literacy was a term introduced by Jorm and colleagues, and is defined as the “knowledge and beliefs about mental disorders that may aid their recognition, management and treatment” (Jorm et al., 1997, p. 182). The authors saw mental health literacy as incorporating a number of dimensions that may be related to individuals with mental health problems, those with whom they interact, and the community as a whole. These dimensions include recognition of general psychological distress and specific mental disorders, knowledge and beliefs concerning risk factors, self-help and available interventions, attitudes that facilitate help-seeking and appropriate sourcing of mental health information (Jorm, 2012; Jorm et al., 1997; Olsson & Kennedy, 2010). The term also extends to attitudes and beliefs likely to be conducive to stigma among sufferers, knowledge concerning how to prevent a mental disorder in oneself and others, and the acquisition of skills (“mental health first aid”) to support individuals who might be experiencing or developing a mental disorder (Hart, Jorm, & Paxton, 2012; Jorm, 2012). It was suggested that sound mental health literacy promotes individual and community wellbeing by facilitating early, appropriate treatment among individuals with mental health problems (Jorm, 2012). Poor mental health literacy, on the other hand, may be conducive to low or inappropriate help-seeking (Hart et al., 2012; Jorm, 2012; Mond et al., 2010; Mond, Hay, Rodgers, Owen, & Beumont, 2004; Olsson & Kennedy, 2010). More generally, ongoing evidence points to poor mental health literacy as a major factor in the continuing individual and community health burden of mental health problems (Andrews, Sanderson, Slade, & Issakidis, 2000; Jorm, 2012; Jorm, Angermeyer, Katschnig, Andrews, & Henderson, 2000; Mond et al., 2010).

Jorm et al. (1997) originally explored the concept of mental health literacy in a sample of 2031 Australian adults who were randomly assigned to read one of two vignettes depicting a character who was experiencing either depression or schizophrenia. Results of the study demonstrated that a majority of the participants failed to correctly recognise the main problem, with only 39% of participants correctly

identifying depression and 27% recognising the presence of schizophrenia. Of particular concern, 16% of participants who received the schizophrenia vignette failed to recognise the presence of any mental health related issue. Whilst participants did indicate that seeing a GP or a counsellor would be helpful for the treatment of the mental health problems described in the vignettes, evidence based treatments, such as seeing a psychologist, psychiatrist or taking psychotropic medications, were not highly endorsed, with the use of self-help interventions, including lifestyle interventions and nutritional supplements, viewed more favourably. This study brought to light a number of concerning misconceptions held by the general public and indicated the need for health promotion programs designed to improve individual and community mental health literacy.

Although early studies of public knowledge and beliefs concerning eating disorders were occasionally conducted (e.g. Smith, Pruitt, Mann, & Thelen, 1986), it is only in recent years that researchers have used the paradigm introduced by Jorm and colleagues to study mental health literacy relating to eating disorders more systematically. One of the first of these more recent studies was conducted by Mond, Hay, et al. (2004), in a community sample of Australian women (n=208) aged 18-45 years. Participants in this study completed self-report measures of eating disorder pathology, impairment in role functioning, general psychological distress, socio-demographic information, and a respondent-based, mental health literacy interview. For the latter, which followed Jorm et al. (1997) protocol, participants were presented with a vignette of a fictional character named "Kelly", who met the DSM-IV criteria for bulimia nervosa (purging subtype). A series of questions addressing participants' knowledge and beliefs concerning the nature and treatment of the problem described followed, including problem recognition, beliefs about the likely helpfulness of different possible interventions, beliefs about prevalence and severity, and beliefs about the likely outcome with and without treatment.

From this work, Mond, Hay, et al. (2004) established a number of valuable findings concerning community mental health literacy relating to bulimic-type eating

disorders. The researchers found that most participants believed that Kelly's problem would be distressing and difficult to treat, and that most participants believed that the "main problem" of the person described in the vignette was "low self-esteem". The prevalence of the problem described among young women in the community was most often estimated to be between 10% and 30%, and one in five respondents reported knowing someone with a problem like Kelly's. Participants were more likely to endorse treatment seeking from a general practitioner, counsellor or dietician for Kelly's problem than from a psychologist or psychiatrist, a finding consistent with Jorm et al. (1997) study of mental health literacy relating to depression. A final, noteworthy finding was that more than 40% of participants reported that they would approach a friend or family member first, if they were to experience a problem such as the one described. This finding was taken by Mond and colleagues to highlight the importance of targeting not only individuals affected in eating disorders prevention and health promotion programs, but also those with whom sufferers interact and the community as a whole (Mond et al., 2010; Mond, Hay, et al., 2004).

3.2. Recognition of Disordered Eating in Others

One aspect of eating disorders mental health literacy that may be particularly important when considering uptake of specialist treatments is the ability to recognise the presence of disordered eating, either in oneself or in others. Recognition is believed to play a fundamental role in health service utilisation for mental health problems and is commonly identified as the "first step" in the help-seeking process (Reavley & Jorm, 2011; Vogel, Wester, Larson, & Wade, 2006). The mental health literacy framework suggests that individuals form cognitive representations of mental disorders, consisting of both knowledge and attitudes, which can then lead to correct (or incorrect) labels being applied to a given disorder (Jorm et al., 1997). The ability to recognise and accurately label a mental health problem would then reflect whether, and to what extent, individuals have the appropriate knowledge to be able to distinguish normal from abnormal (Hepworth & Paxton, 2007; Jorm, 2012). Hepworth

and Paxton (2007) suggest that it is the combination of lacking knowledge about symptoms and possible treatment avenues that contribute to poor recognition.

Controversy exists around the use of psychiatric labels by the general community (Haller, Sanci, Sawyer, & Patton, 2009). However, more accurate knowledge concerning the nature and treatment of mental health problems has been found to be predictive of greater uptake of evidence-based treatment, including better detection and referral practices on the part of primary care practitioners (Haller et al., 2009). In a review of the literature on mental health literacy in young people, Kelly, Jorm, and Wright (2007), found that participants who were more accurate in labelling mental health problems were more likely to endorse the use of evidence-based treatments and less likely to endorse inappropriate treatment options. Furthermore, delays in treatment seeking have been found to be due to poor problem recognition, with faster problem recognition associated with earlier help-seeking (A. Thompson, Hunt, & Issakidis, 2004).

Research suggests that recognition of the presence of bulimic-type eating pathology in others is indeed poor, and that this is the case amongst both women in the general population, and amongst women who themselves have eating disorder symptoms (Mond et al., 2009; Mond, Hay, Rodgers, & Owen, 2008; Mond, Hay, et al., 2004). This was highlighted in a study by Mond et al. (2010), which examined aspects of eating disorders mental health literacy among young adult women (n=756), recruited from four tertiary education campuses in two different regions of Australia (Victoria and Queensland). In this study, participants were divided into three groups, namely, low-risk (N=332), high-risk (N=83) and symptomatic (N=94), following completion of self-report measures of eating disorder symptoms and impairment in role functioning. A vignette of a fictional character with symptoms of bulimia nervosa (purging subtype) was then presented, followed by a series of mental health literacy questions. The first of these questions required participants to indicate, from a list of twelve possible options, what they considered to be the “main problem” of the person described. The options included: “bulimia nervosa”; “anorexia nervosa”; “an eating disorder, but not

anorexia or bulimia”; “yo-yo dieting”; “poor diet”; “low self-esteem/lack of self-confidence”; “depression”; “an anxiety disorder or problem”; “stress”; “a nervous breakdown”; “a mental health problem”; and “no real problem, just a phase”.

In both the low-risk and high-risk groups, “low self-esteem” was the modal response. Only 21.1% of participants in the low-risk group recognised bulimia nervosa as the main problem, 24.5% of participants in the symptomatic subgroup and 19.8% of participants in the high-risk group. The third most commonly endorsed option, in all three groups, was “a mental health problem”, despite the option to select “an eating disorder but not anorexia or bulimia”. Similar findings were established in a subgroup of women (N=158), who had reported high levels of bulimic-type symptomatology, from a general population sample of 5255 female residents in the Australian Capital Territory (Mond et al., 2008). The study had used the same vignette methodology, and only 18.5% of participants recognised that the main problem described was bulimia nervosa, the modal response again being “low self-esteem” (48.4%). Taken together, findings from these studies (Mond et al., 2010; Mond et al., 2008; Mond, Hay, et al., 2004) suggest that recognition of the presence of bulimic-type eating pathology in others may be poor and that this is the case not only at the population level, but also among individuals who have eating disorder symptoms or indeed eating disorders. Poor recognition of eating-disordered behaviour in others has obvious implications for health promotion and early intervention programs, as improving community mental health literacy relating to bulimic-type eating disorders, could translate into an increased likelihood that early and appropriate treatment is received by individuals with these disorders (Mond et al., 2010).

3.3. Self-Recognition of Disordered Eating

In the context of the mental health literacy framework, recognition refers to the ability to recognise a set of symptoms and label them as a discrete disorder, whether this ability is applied to symptoms that may be present in oneself or in others. Improved recognition of disordered eating in others has obvious implications for early

intervention, such as ability of family members to identify the need for, and facilitate uptake of treatment, among loved ones with symptoms. Self-recognition, on the other hand, refers to the ability of an individual who themselves has symptoms to recognise these as being characteristic of a mental health problem and, therefore, problematic. Models of help-seeking, such as those developed by Andersen and Newman (1973) and Goldberg and Huxley (1980), identified self-recognition as an influencing variable, which would potentially affect health service utilisation. In theory, individuals need to recognise that their behaviour is characteristic of ill-health before considering the possibility that advice or treatment from a health professional may be required (Andersen and Newman, 1973). Hence, the inability to recognise one's behaviour as being characteristic of ill-health may also be a barrier to help-seeking, a more potent barrier, perhaps, than recognition of adverse health states by others. In more recent theorising, self-recognition of adverse health states has been viewed, more broadly, as a means of enhancing individuals' control over their health and well-being (WHO, 2014).

Although lack of insight has long been recognised as a barrier to treatment engagement among individuals with eating disorders receiving specialist treatment (e.g. Vitousek, Daly, & Heiser, 1991) - individuals with anorexia nervosa in particular - surprisingly little research has examined self-recognition of disordered eating in unselected samples of individuals with the more commonly occurring, bulimic-type eating disorders. To address this gap in the literature, Mond, Rodgers, Hay, and Owen (2006) examined self-recognition of disordered eating and associated factors among women with bulimic-type eating disorders (n=158) recruited at the second phase of a two-phase epidemiological study, from an urbanised area of Australia. The methodology was similar to that employed in Mond, Hay et al.'s (2004) initial study of eating disorders mental health literacy in healthy women. A vignette of a fictional character ("Kelly") meeting DSM-IV diagnostic criteria for bulimia nervosa (purging subtype) was presented, followed by a series of questions concerning the nature and treatment of the problem described (cf. Mond et al, 2008). Embedded in these

questions was a single item, “Do you think you currently have a problem like Kelly’s?” that assessed self-recognition. Participants who responded in the affirmative were designated to the “recognisers” group, whereas those who responded in the negative were designated to the “non-recognisers” group. All participants completed, in addition to the mental health literacy interview, self-report measures of eating disorder and comorbid psychopathology, as well as height and weight and socio-demographic characteristics (cf. Mond et al., 2008; Mond, Rodgers, et al., 2006).

Three key findings emerged from this study. First, only half (51.9%) of participants recognised a problem with their eating, notwithstanding the fact that all participants had clinically significant eating disorders diagnosed by means of interview assessment. Second, whereas a number of variables were associated with self-recognition in bivariate analysis, the best “predictor” of self-recognition, in both bivariate and multivariable analysis, was occurrence of self-induced vomiting as a means of controlling weight or shape. Finally, there was significant, positive association between self-recognition and help-seeking, such that participants who recognised a problem with their eating were more likely to have sought professional treatment for an eating or weight problem than those who did not. These findings were taken to infer that individuals with bulimic-type eating disorders who are not currently engaging in self-induced vomiting may be particularly unlikely to consider their eating behaviour to be pathological and, in turn, less likely to believe that treatment for this behaviour is warranted, nor that seeking treatment is necessary (Mond, Rodgers, et al., 2006).

As Mond and colleagues (2006) noted, it would be important to replicate these findings in a different sample in order to determine their generalisability. To the author’s knowledge, replication of this kind has not yet been conducted. Confirmation that recognition of disordered eating is poor among individuals with bulimic-type eating disorders, and that this may be conducive to low or inappropriate help-seeking, would strengthen the case for targeting self-recognition in programs, designed to reduce the individual and community health burden of eating-disordered behaviour. The targeting of self-recognition in such programs could improve help-seeking, whether this occur by

means of health promotion, prevention, early intervention or a combination of these approaches (Mond, 2014; Mond et al., 2010). For example, health promotion programs might usefully seek to improve community awareness and understanding of bulimic-type eating disorders (Mond, Mitchison, & Hay, 2014). Alternatively, early intervention initiatives might aim to achieve a similar goal among individuals with early symptoms, either through screening for and targeting these individuals directly, or by seeking to improve mental health literacy among members of the community and health professionals with whom individuals with symptoms are likely to interact (Hart et al., 2012; Hart, Jorm, Paxton, Kelly, & Kitchener, 2009; Mond, 2014; Mond et al., 2010). These goals could be seen to be complementary in that improving community awareness and understanding of bulimic-type eating disorders in the longer term should be conducive to improved self-recognition among individuals who develop symptoms (Mond, 2014). To date, programs designed to reduce the public health burden of eating-disordered behaviour have been largely confined to selective prevention programs in the high-risk subgroups of adolescent and young adult women (Stice, Becker, & Yokum, 2013), whereas health promotion and early intervention approaches have been somewhat neglected (Mond et al., 2014). Ideally, these different approaches would be integrated and with clinical management in whole populations (Mond, 2014; Mond et al., 2014; Wilfley, Agras, & Taylor, 2013). Although in theory, investigation of the roles of both recognition and self-recognition as barriers to treatment among individuals with bulimic-type eating disorders would be of interest, research addressing the role of self-recognition would seem particularly worthy of investigation, given the findings of Mond, Rodgers, et al. (2006) as outlined above.

3.4. Summary

Mental health literacy refers to “knowledge and beliefs about mental disorders that may aid their recognition, management and treatment”. Evidence suggests that poor mental health literacy may be a key factor in low or inappropriate help-seeking among individuals with mental health problems. One aspect of eating disorders mental

health literacy that appears to be worthy of further investigation is the failure of individuals with bulimic-type eating disorders to recognise that their eating and/or weight-control behaviours are pathological. Research confirming the existence of poor eating disorder mental health literacy of this kind indicates the need for interventions to improve awareness and understanding of bulimic-type eating disorders among individuals with symptoms, those with whom they interact, and the community as a whole, with a view to improving the likelihood that early, appropriate treatment is received and in a timely way.

3.5. Background to Study One

Findings from Mond, Rodgers, et al. (2006) study suggested that self-recognition of disordered eating amongst women with probable bulimic-type eating disorders may be poor, particularly among individuals with these disorders who do not engage in self-induced vomiting, and that this may be a factor in low or inappropriate help-seeking. However, the authors emphasised the need for replication of their findings in a different study population. With this in mind, the goal of the first study reported in this thesis was to replicate the findings for Mond, Rodgers, et al. (2006) in a different study population. Female university students were chosen for this purpose since the comparatively high prevalence of disordered eating in this population would permit identification of a sufficiently large subgroup of symptomatic participants without the need for the very large sample size employed at the first phase of Mond, Rodgers, et al. (2006) population-based study. Consistent with the findings of Mond, Rodgers, et al. (2006), it was hypothesised that (i) self-recognition of disordered eating among participants with bulimic-type eating disorders would be poor, (ii) that self-recognition would be more likely among participants who employed self-induced vomiting as a means of controlling weight or shape, and that (iii) self-recognition would be associated with increased likelihood of help-seeking.

Chapter Four

Study One: Self-Recognition of Eating-Disordered Behaviour in Young Women: Further Evidence of Poor Eating Disorders “Mental Health Literacy”?

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Gratwick-Sarll, K.E., Mond, J.M., & Hay, P.J. (2013). Self-Recognition of Eating-Disordered Behaviour in College Women: Further Evidence of Poor Eating Disorders "Mental Health Literacy"? *Eating Disorders: The Journal of Treatment & Prevention*, 21, 310-327. doi: 10.1080/10640266.2013.797321.

Abstract

Self-recognition of eating-disordered behaviour was examined among female college students (n=94) with a high level of bulimic-type eating disorder symptoms. A vignette was presented describing a fictional young woman with bulimia nervosa. Participants were asked whether they might currently have a problem such as the one described, while also completing self-report measures of eating disorder symptoms, general psychological distress and functional impairment. Approximately half (52.1%) of participants believed that they currently had a problem with their eating. In both bivariate and multivariable analysis, the variables most strongly associated with self-recognition were overall levels of eating disorder psychopathology, prior treatment for an eating problem and the use of self-induced vomiting as a means of controlling weight or shape. No other eating disorder behaviours were independently associated with self-recognition. The findings support the hypothesis that young women with eating disorder symptoms may be unlikely, or at least less likely, to recognise a problem with their eating behaviour when that behaviour does not entail self-induced vomiting. Health promotion and early intervention programs for eating disorders may need to address the perception that, among young women of normal or above-average body weight, only problems with eating that involve self-induced vomiting are pathological.

Bulimic-type eating disorders, namely bulimia nervosa (BN), binge eating disorder (BED) and variants of these disorders not meeting formal diagnostic criteria, are common among women and associated with high levels of distress and functional impairment (Hudson, Hiripi, Pope, & Kessler, 2007; Mond & Hay, 2007; Mond, Hay, Rodgers, Owen, Crosby, et al., 2006; Striegel-Moore et al., 2001). Although effective treatment is available, community-based studies have found that only a minority of women suffering from these disorders ever receive professional treatment for an eating problem (Mond, Hay, Darby, et al., 2009; Mond, Hay, Rodgers, & Owen, 2007). Hence, there is a need to identify factors associated with low or inappropriate treatment seeking and to use this information to inform the conduct of prevention and early intervention programs (Hart, Jorm, Paxton, Kelly, & Kitchener, 2009; Mond, Hay, et al., 2010).

Although research addressing factors associated with treatment for bulimic-type eating disorders is in its infancy, evidence suggests that individuals with these disorders, like those with other mental health problems, tend to seek treatment when levels of distress or functional impairment become unmanageable (Mond, Hay, Darby, et al., 2009; Mond, Hay, et al., 2007). However, it is also apparent that many individuals with eating disorders do not seek specialist treatment even when levels of distress and disability reach a critical level (Mond, Hay, Darby, et al., 2009; Mond, Hay, et al., 2007). Hence, research continues to consider the role of potential barriers to treatment, including demographic variables, such as age, gender and ethnicity, socio-economic variables, such as income and cultural values, environmental variables, such as geographical location, and variables particular to the individual, such as knowledge and beliefs concerning the nature of treatment of eating-disordered behaviour, perceived stigma associated with disclosure of mental health problems and ego-syntonic properties of certain eating disorder features (A. Becker, Arrindell, Perloe, Fay, & Striegel-Moore, 2010; A. Becker, Thomas, Franko, & Herzog, 2005; Cachelin, Rebeck, Veisel, & Striegel-Moore, 2001; Hepworth & Paxton, 2007; Mond, Hay, Darby,

et al., 2009; Mond, Hay, et al., 2010; Mond, Hay, et al., 2007; Mond, Hay, Rodgers, & Owen, 2008; Serpell & Treasure, 2002).

Individuals' knowledge and beliefs about mental disorders have been referred to as their "mental health literacy" (MHL), a term introduced by Jorm and colleagues to extend the concept of health literacy to mental health problems (Jorm et al., 1997). Specifically, MHL has been defined as "knowledge and beliefs about mental disorders which aid their recognition, management or prevention" (Jorm et al., 1997; p. 182). Jorm and colleagues, and others, have suggested that poor MHL - on the part of both individuals with symptoms and the community as a whole - is a major factor in low or inappropriate help seeking among individuals with mental health problems and that improved MHL could lead to more informed help seeking decisions and, in turn, better outcomes (Andrews, Sanderson, Slade, & Issakidis, 2000; Jorm, 2000, 2012; Jorm, Angermeyer, Katschnig, Andrews, & Henderson, 2000; Jorm et al., 1997).

One aspect of the MHL of individuals with bulimic-type eating disorders that may be worthy of investigation is the ability of these individuals to recognise the signs of an eating problem in themselves. Clinical experience suggests that lack of insight is characteristic of eating disorder patients, although this tends to be more pronounced among individuals with AN and variants of AN than individuals with bulimic eating disorders (Gale, Holliday, Troop, Serpell, & Treasure, 2006; Vitousek, Watson, & Wilson, 1998). Perhaps more relevant, for individuals with bulimic eating disorders, is that MHL concerning the symptoms of BN, BED and variants of these disorders may be poor (Mond et al., 2008; Striegel-Moore et al., 2001). There is some evidence, for example, that knowledge of BN among college students has been - and remains - poor when compared with AN, perhaps because BN has received less attention in the popular media than AN (Mond & Arrighi, 2011). Knowledge of BED, which was only introduced as a provisional diagnosis in 1994, may be poorer still (Striegel-Moore et al., 2001; Striegel-Moore et al., 2004). If community knowledge of bulimic eating disorders is poor, then individuals who develop symptoms of these disorders may be less likely to recognise that they have an eating problem and, in turn, less likely to seek treatment

for those symptoms (Mond, Hay, et al., 2007; Mond, Myers, Crosby, Hay, & Mitchell, 2010).

To our knowledge, only one community-based study has examined individuals' "self-recognition" of eating disorder symptoms. In a general population sample of women aged 18 to 40 years ($M = 30.3$ years, $SD = 7.2$) with bulimic-type eating disorders, (Mond, Rodgers, Hay, & Owen, 2006) found that less than half (48.1%) of participants believed that they currently had an eating problem. As expected, self-recognition was related to the severity of current levels of eating disorder psychopathology, distress and functional impairment. Interestingly, however, recognition was also associated with the occurrence of specific eating disorder behaviours, in particular, the use of self-induced vomiting as a means of controlling weight or shape. Moreover, the occurrence of self-induced vomiting was the only behaviour associated with self-recognition in multivariable analysis. These findings raised the possibility that young women with bulimic eating disorders may recognise that they have an eating problem, or a problem warranting treatment, when purging behaviours are present, whereas eating disorders involving non-purging methods of weight control or binge eating in the absence of extreme weight-control behaviours may be perceived as normative or as symptomatic of a comorbid mental health problem rather than an eating problem per se (Mond, Rodgers, et al., 2006).

As Mond and colleagues (2006) noted, it will be important to replicate these findings in a different population before presuming they can be generalised. Replication in a sample of college women may be particularly important, for at least three reasons. First, the prevalence of bulimic eating disorders, and of risk factors for these disorders, such as body dissatisfaction, is significantly higher among college women than among women of similar age in the general population (Luce, Crowther, & Pole, 2008; Mond & Arrighi, 2012). Second, the peak age of onset for bulimic-type eating disorders is late adolescence to early adulthood, i.e., when many young women begin tertiary studies (Hudson et al., 2007; Preti et al., 2009). Hence, information that has the potential to inform prevention and early intervention programs for eating disorders in college

women is particularly welcome. Finally, levels of self-recognition - and the factors associated with this - may be different for young women than for middle-aged or older women (McLean, Paxton, & Wertheim, 2011).

With these considerations in mind, the goal of the present study was to examine levels of and factors associated with self-recognition of eating disordered behaviour among college women with bulimic-type eating disorder symptoms. Based on the findings of Mond and colleagues (2006), as outlined above, it was hypothesised that women who report the use of self-induced vomiting or other purging behaviours would be more likely to recognise a problem with their eating than those who did not, after controlling for differences in overall levels of eating disorder psychopathology, general psychological distress and impairment in quality of life. It was also hypothesised that self-recognition of an eating problem would be independently associated with help seeking behaviour.

Methods

Study design and participants

The data were collected as the baseline assessment of a longitudinal study of outcome among women with eating disorder symptoms (Mond, Hay, et al., 2010). Participants were women from four tertiary education campuses in Queensland and Victoria, Australia. Recruitment strategies varied and included approach via central University email/web mail, printed advertisements in student bulletins and halls of residence and direct approach to students in University common areas. For individuals approached via email, participants were given the option of completing an on-line questionnaire. For other participants, questionnaires were provided in hard copy with reply-paid envelopes. The questionnaire included, in addition to the assessment of self-recognition and other aspects of the mental health literacy, measures of eating disorder psychopathology, general psychological distress, functional impairment and limited demographic information, namely, age, marital status and country of birth, as well as height and weight (Mond, Hay, et al., 2010). Body mass index (BMI) (kg/m²) was derived from self-reported height and weight (Mond, Hay, Rodgers, Owen, &

Beumont, 2004). The study methods were approved by the Ethics Committees of the participating Universities.

A total of 756 women, with a mean (SD) age of 27.2 (10.7) years (median = 22.0, interquartile range = 13.0), returned completed questionnaires. The inclusion of some participants aged 45 years or higher (n=79, 10.5%) reflects the enrolment of mature-age students and members of staff at some campuses. Reflecting the demographic profile of the region, most participants were born in Australia (80.2%). Given the methods of recruitment employed, it was not possible to determine response rates and no information was available concerning the characteristics of non-respondents. However, comparison of participants' scores on the eating disorder symptom measure with those of normative data suggested that levels of eating disorder psychopathology in the present study sample were somewhat higher than those of young women in the general population, as would be expected (Luce et al., 2008; Mond & Arrighi, 2012; Mond, Hay, Rodgers, & Owen, 2006).

Participants in the present study were 94 women (12.4% of the total sample) who were classified as "probable eating disorder cases" using an operational definition that we have found useful in previous research, namely, extreme weight or shape concerns in conjunction with the regular occurrence of any eating disorder behaviour (see below). These criteria have been found to identify a highly symptomatic subgroup of women - in terms of eating disorder psychopathology, general psychological distress and functional impairment - in several previous, community-based studies (Mond & Arrighi, 2012; Mond, Hay, Rodgers, & Owen, 2009; Mond, Marks, et al., 2007).

Study Measures

Assessment of Self-Recognition

At the beginning of the questionnaire, participants were presented with a vignette of a (fictional) young woman ("Naomi") with symptoms characteristic of BN. As in previous studies employing this paradigm (Mond & Arrighi, 2011, 2012; Mond, Hay, et al., 2010; Mond et al., 2008; Mond, Rodgers, et al., 2006) care was taken to ensure

that key criteria for the disorder were met while avoiding the use of technical/medical language (see Appendix).

Presentation of the vignette was followed by a series of questions concerning the nature and treatment of the problem described (Mond & Arrighi, 2011, 2012; Mond, Hay, et al., 2010; Mond et al., 2008; Mond, Rodgers, et al., 2006) embedded in which was a single item assessing self-recognition, namely: "Do you think that you might currently have a problem like Naomi's?" Participants who responded in the affirmative to this question constituted the "recognisers" subgroup, whereas participants who responded no to this question were designated "non-recognisers".

To assess help seeking, participants asked if they had ever sought help for a problem like Naomi's. Participants who responded in the affirmative to this question were asked to indicate, from a list of some 15 options, from whom they had sought this help. The remainder of the survey was given to the assessment of eating disorder features, general psychological distress and impairment in role functioning.

Eating disorder symptomatology

The occurrence and frequency of specific eating disorder features were assessed using the Eating Disorder Examination Questionnaire (EDE-Q) (Fairburn & Beglin, 1994), a 36-item, self-report measure that focuses on the past 28 days. Scores on each item range from "0" to "6", with higher scores indicating higher symptom levels. Scores on four subscales (Restraint, Eating Concern, Weight Concern and Shape Concern) and a global score may be derived from 22 items addressing attitudinal aspects of eating disorder psychopathology (Mond, Hay, Rodgers, & Owen, 2006). A high level of agreement between self-report and interview assessment of these features has been demonstrated in various study populations (Berg, Peterson, Frazier, & Crow, 2012; Mond et al., 2004). Cronbach alphas in the present study ranged from 0.81 (Restraint subscale) to 0.95 (Global score).

Remaining items of the EDE-Q assess the occurrence and frequency of eating disorder behaviours, namely, objective binge eating, subjective binge eating, self-induced vomiting, misuse of laxatives, diuretics or diet pills, extreme dietary restriction

and excessive exercise. For objective and subjective binge eating, self-induced vomiting, and misuse of laxatives, diuretics or diet pills, “regular” was defined as “at least weekly”, whereas regular extreme dietary restriction and excessive exercise were recognised if these behaviours occurred, on average, “3” or more times per week or five or more times per week, respectively (Mond, Hay, Rodgers, et al., 2009). “Extreme weight or shape concerns” was defined as a score of “5” or “6” on either or both of the “Importance of Weight” and “Importance of Shape” items (Mond, Hay, Rodgers, et al., 2009; Mond, Marks, et al., 2007).

General psychological distress

General psychological distress was assessed with the Kessler Psychological Distress Scale (K-10), a 10-item measure of general psychological distress developed for use in general population studies (Kessler et al., 2002). In Australia it is also used as an outcome measure among individuals treated within mental health services and in routine population health surveillance (Andrews & Slade, 2001). The frequency of each of 10 depressive or anxiety symptoms is measured on a scale from “1” to “5”. In the present study, coding of response options was such that total scale scores range from 10 to 50, with lower scores indicating higher levels of distress and a score of 30 or less indicating a high probability of clinically significant anxiety and/or depressive symptoms (Andrews & Slade, 2001). Cronbach’s alpha in the present study was 0.88.

Functional impairment

Impairment in role functioning was assessed with the Medical Outcomes Study Short-Form disability scale (SF-12) (Ware, Kosinski, & Keller, 1996), a (12-item) self-report, generic measure of health-related quality of life. Items are summarized into two weighted scales (Physical Component Summary scale, PCS; Mental Component Summary scale, MCS), designed to assess impairment in role functioning associated with physical and mental health problems. Each scale is scored to have a mean of 50 and standard deviation of 10, with lower scores indicating higher levels of impairment. The SF-12 has good psychometric properties (Ware et al., 1996) and its validity in the Australia population has been demonstrated (Sanderson & Andrews, 2002). A score of

30 or less on the MCS indicates severe impairment in mental health, whereas a score between 31 and 40 indicates moderate impairment (Sanderson & Andrews, 2002).

Cronbach's alpha in the present study was 0.82.

Statistical analysis

Participants who recognised an eating problem were compared with those who did not on with respect to age, BMI, demographic characteristics, levels of eating disorder psychopathology (EDE-Q subscales and global scores and occurrence of specific eating disorder features), general psychological distress, functional impairment and help seeking. Independent samples t-tests or Mann-Whitney U tests were used for comparisons involving continuous outcome variables, depending on the distributions of the variables concerned, whereas differences between groups on categorical variables were examined using chi-square tests. Binary logistic regression analysis with simultaneous variable entry was used to identify the variable(s) most strongly associated with recognition of an eating problem, all other study variables acting as covariates. A significance level of 0.05 was used for all tests.

Results

Descriptive statistics

Table 1 shows participants' mean age, BMI, EDE-Q subscale scores, scores on measures of general psychological distress (K-10), functional impairment (SF-12 PCS and MCS), and frequency of (regular) occurrence of specific eating disorder behaviours. For descriptive purposes, data for women who did not have eating disorders (n = 662) are also given.

Table 1: Descriptive statistics: mean (SD) age, BMI, scores on measures of eating disorder psychopathology, general psychological distress and functional impairment, and frequency of (regular) occurrence of specific eating disorder behaviours for study participants (n=94) and for women who did not have an eating disorder (n=662).

	Study Participants (n=94)	No Eating Disorder (n=662)
	Mean (SD)	Mean (SD)
Age	25.04 (8.67)	27.55 (10.92)
BMI (kg/m ²)	25.72 (6.89)	23.68 (5.03)
Eating Disorder Examination subscales		
Restraint	3.55 (1.62)	1.31 (1.27)
Eating concern	3.17 (1.53)	0.68 (0.85)
Weight concern	4.52 (1.03)	1.75 (1.33)
Shape concern	4.76 (1.03)	2.10 (1.41)
Global score	4.00 (1.12)	1.46 (1.05)
SF-12 PCS ⁱ	50.96 (9.12)	52.33 (7.22)
SF-12 MCS ⁱⁱ	34.56 (10.69)	45.96 (10.75)
K-10 ⁱⁱⁱ	33.31 (8.21)	42.41 (6.29)
	%	%
Objective binge eating ^{iv}	62.8	7.9
Subjective binge eating ^{iv}	63.8	11.9
Self-induced vomiting ^{iv}	17.0	0.6
Laxative misuse ^{iv}	8.5	0.6
Diet pills ^{iv}	22.3	1.1
Extreme dietary restriction ^v	31.9	2.9
Excessive exercise ^v	25.5	5.6

i) SF-12 Physical Component Summary Scale ii) SF-12 Mental Component Summary Scale. iii) Kessler Psychological Distress Scale iv) For objective and subjective binge eating, self-induced vomiting and misuse of laxatives or diet pills, "regular" was defined as at least weekly v) Regular "extreme dietary restriction" was defined as going without food for periods of 8 or more waking hours in order to influence weight or shape on average at least 3 times per week, whereas regular "excessive exercise" was defined as exercising hard in order to influence weight or shape on average at least 5 times per week.

As can be seen, the most common eating disorder behaviours among individuals with eating disorders were objective (62.8%) and subjective (63.8%) binge eating. Non-purging forms of extreme weight-control behaviours, namely, extreme dietary restriction (31.9%), excessive exercise (25.5%) and use of diet pills (22.3%), were more common than self-induced vomiting (17.0%) and laxative misuse (8.5%), as would be expected in a non-clinical sample (Mond & Hay, 2007; Mond, Hay, Rodgers, Owen, Crosby, et al., 2006).

Characteristics of participants with eating disorder symptoms

Forty-three participants (45.7%) reported regular objective and/or subjective binge eating in conjunction with the use of one or more extreme weight-control behaviours, and would therefore be considered to be variants of BN, whereas 30 women (31.9%) reported objective and/or subjective binge eating in the absence of any regular extreme weight-control behaviour and would therefore be considered to be variants of BED. Remaining participants ($n = 21$) were those who reported one or more regular extreme weight-control behaviours in the absence of regular (objective or subjective) binge eating episodes, a presentation that has been termed “compensatory disorder” (Mond, Hay, Rodgers, Owen, Crosby, et al., 2006; Tobin, Griffing, & Griffing, 1997).

As would also be expected, participants tended to be of normal or above-average body weight. Of the 91 participants who reported their height and weight, 5 (5.5%) were underweight ($BMI < 18.5$), 51 (56.0%) were of normal weight ($18.5 \leq BMI < 25.0$), 15 (16.5%) were overweight ($25.0 \leq BMI < 30.0$) and a further 20 (22.0%) were obese ($BMI \geq 30.0$) (Striegel, Bedrosian, Wang, & Schwartz, 2012). Most participants (81.3%) were born in Australia and had never been married (69.6%) and there were no differences between individuals with eating disorders and asymptomatic women in these respects.

Variables associated with self-recognition of disordered eating

Approximately half of participants ($n=49$, 52.1%) recognised a problem with their eating, whereas 45 participants (47.9%) reported that they did not currently have a problem such as the one described. As can be seen in Table 2, participants who recognised an eating problem had higher levels of eating disorder psychopathology and tended to have higher levels of general psychological distress than those who did not. Further, participants who recognised an eating problem were more likely to report self-induced vomiting (87.5% vs 12.5%, $p < 0.01$) and extreme dietary restriction (66.7% vs 33.3%, $p = 0.05$) as a means of controlling weight or shape than those who did not. There were no differences between groups with respect to country of birth (χ^2_1

= 1.12, $p = 0.57$) or marital status ($\chi^2_1 = 2.76$, $p = 0.25$), nor any association between self-recognition and the type of eating problem (BN-type, BED-type or compensatory-type) ($\chi^2_2 = 2.28$, $p = 0.32$).

Approximately one third of participants (35.1%) reported that they had ever sought help from a health professional, such as a general practitioner, psychologist or dietician/nutritionist, for a problem such as the one described. Of the 49 participants who recognised a problem with their eating, 24 had ever sought such help, whereas 9 of the 45 participants who did not recognise a problem with their eating had ever sought help (49.0% vs 20.0%; $\chi^2_1 = 8.65$, $p < 0.01$).

Table 2: Mean (SD) age, BMI, scores on measures of eating disorder psychopathology, general psychological distress and functional impairment, and frequency of (regular) occurrence of specific eating disorder behaviours for participants who recognised a problem with their eating (n=49) and those who did not recognise a problem with their eating (n=45).

	Non-Recognisers (n=45)	Recognisers (n=49)		
	Mean (SD)	Mean (SD)	t	p
Age	26.38 (10.07)	23.82 (7.03)	1.44	.15
BMI (kg/m ²)	26.04 (6.30)	25.43 (7.46)	0.42	.68
			z	p
Eating Disorder Examination subscales				
Restraint	3.04 (1.56)	4.03 (1.55)	-2.98	<.01
Eating concern	2.44 (1.49)	3.83 (1.25)	-4.14	<.01
Weight concern	4.19 (1.09)	4.82 (0.88)	-3.00	<.01
Shape concern	4.52 (1.19)	4.99 (0.81)	-1.71	.09
Global score	3.54 (1.13)	4.43 (0.92)	-3.71	<.01
SF-12 PCS ⁱ	51.41 (7.74)	50.55 (10.27)	0.00	1.00
SF-12 MCS ⁱⁱ	35.49 (10.15)	33.72 (11.19)	-0.89	.37
K-10 ⁱⁱⁱ	34.64 (8.47)	32.08 (7.86)	-1.55	.12
	%	%	X	p
Objective binge eating	44.1	55.9	0.92	.34
Subjective binge eating	45.0	55.0	0.55	.46
Self-induced vomiting	12.5	87.5	9.67	< .01
Laxative misuse	25.0	75.0	1.83	.18
Diet pills	42.9	57.1	0.27	.60
Extreme dietary restriction	33.3	66.7	3.73	.05
Excessive exercise	54.2	45.8	0.51	.47

i) SF-12 Physical Component Summary scale ii) SF-12 Mental Component Summary scale iii). Kessler Psychological Distress Scale

Multivariable analysis

For the logistic regression analysis, all variables that were associated with self-recognition at a p value of 0.20 or less in bivariate analysis were included in the regression model (Katz, 2006). Only the EDE-Q global score - as opposed to the subscales from which it is derived - was included in the regression analysis.

Multicollinearity between the EDE-Q global score and the occurrence of specific eating disorder behaviours was not an issue (all $r \leq 0.4$).

As can be seen in Table 3, the only variables independently associated with self-recognition were the EDE-Q global score, the occurrence of self-induced vomiting and prior help seeking. The findings were unchanged when the analysis was repeated using stepwise (forwards and backwards) variable selection procedures (Katz, 2006).

Table 3. Logistic regression analysis of variables associated with self-recognition for an eating problemⁱ

Variables	Odds Ratio	95% CI	p-value
EDEQ Global Score	2.299	1.149, 4.602	.019
Occurrence of vomiting	4.175	1.147, 15.194	.030
Prior help seeking	3.726	1.113, 12.468	.033

i) Categorical covariates and treatment received were coded 0 ('no') or 1 ('yes'). CI: confidence interval.

Discussion

Summary of main findings

The aim of this study was to examine levels of and factors associated with self-recognition of eating-disordered behaviour among college women (n = 94) with a high level of eating disorder symptoms. The main findings were twofold. First, despite high levels of eating disorder and comorbid psychopathology, close to half (47.9%) of participants did not believe that they currently had a problem with their eating. Second, the variables most strongly associated with self-recognition were overall levels of eating disorder psychopathology, prior treatment from a health professional for an eating problem and the use of self-induced vomiting as a means of controlling weight or shape. No other eating disorder behaviours or other variables were independently associated with self-recognition. In addition, self-recognition was associated with help seeking. Whereas close to half of participants who recognised a problem with their eating had ever sought treatment for an eating problem, only one in five participants who did not recognise a problem with their eating had sought such help.

Study implications

Consistent with findings from Mond, Rodgers, et al. (2006) study, both overall levels of eating-disorder psychopathology, as measured by the EDE-Q global score,

and the occurrence of specific eating disorder behaviours, were associated with increased likelihood of self-recognition among participants in the present study. Thus, in bivariate analysis, significant associations between self-recognition and both self-induced vomiting and extreme dietary restriction were observed, whereas the association between laxative misuse and self-recognition approached significance. However, and also consistent with the findings of Mond, Rodgers, et al. (2006), the occurrence of self-induced vomiting was the strongest independent variable of self-recognition in bivariate analysis and this was the only eating disorder behaviour to be associated with self-recognition after controlling for other independent variables in the multivariable analysis. Hence, the present findings provide further support for the hypothesis that young women with bulimic-type symptoms may be unlikely, or at least less likely, to recognise a problem with their eating behaviour when that behaviour does not involve self-induced vomiting.

One interpretation of these findings is that community understanding of the spectrum of eating-disordered behaviour that occurs at the population level is poor, such that eating disorders characterised by binge eating and/or the use of non-purging weight-control behaviours, but not self-induced vomiting, tend to be viewed as being benign or even normative (Mond, Rodgers, et al., 2006). This would not be altogether surprising, given that BED is a relatively new addition to the DSM and given that the portrayal of eating disorders in the popular media tends to focus on disorders characterised by low body weight and/or the use of purging behaviours to the exclusion of other conditions (Mond & Arrighi, 2011; Striegel-Moore & Franko, 2003). Further, the distinction between “purging” and “non-purging” forms of BN, embedded in the DSM since 1987, and more recently, use of term “purging disorder” to refer to disorders characterised by the use of extreme weight-control behaviours in the absence of binge eating, may have reinforced the perception that bulimic-type eating disorders characterised the use of non-purging weight control behaviours are benign and/or uncommon when in fact they are neither (Mond, Hay, Rodgers, Owen, Crosby, et al., 2006; Mond, Hay, Rodgers, Owen, & Mitchell, 2006b; Mond, Rodgers, et al., 2006).

If this interpretation is correct, then health promotion programs for eating disorders will need to address the perception that, among young women of normal or above-average body weight, only eating problems that involve self-induced vomiting are pathological. This may be particularly important in college-based health promotion programs, given the high prevalence of bulimic behaviours among college women. Encouraging findings have been reported in recent, sorority-based programs designed to reduce the prevalence of body dissatisfaction and other risk factors for eating disordered behaviour in young women (C. Becker, Bull, Schaumberg, Cauble, & Franco, 2008). The present findings suggest that information designed to improve MHL relating to bulimic-type eating disorders might be a useful addition to programs of this kind and in programs targeting individuals with early symptoms. Ideally, efforts of this kind would extend beyond individuals at risk or with symptoms to those with whom they interact on a daily basis, primary care practitioners and other non-specialist health professionals, and the community as a whole (Jorm, 2012; Mond, Hay, et al., 2010; Mond, Mitchison, & Hay, 2014; Neumark-Sztainer et al., 2006).

Also of note is that in the present study, as in Mond et al.'s (2006) study, self-recognition was associated with actual help seeking. Whereas close to half of participants who recognised a problem with their eating had ever sought treatment for an eating problem, only one in five participants who did not recognise a problem with their eating had sought such help. Further, this association remained significant after controlling for levels of general psychological distress and other potential covariates. Hence, the present findings suggest not only that self-recognition of eating disorder symptoms may be poor, but also that this lack of insight may be conducive to low or inappropriate treatment seeking. Alternatively, treatment seeking may be conducive to better recognition of problem behaviour or associations might exist in both directions (Jorm et al., 2000). Although the cross-sectional design of the present study precludes any firm conclusions in this regard, the low overall levels of help seeking indicate that continued efforts are needed to promote early, appropriate help seeking among individuals with eating disorder symptoms.

Study limitations and other methodological considerations

Limitations of the present research should be noted. First, self-recognition was assessed with a single question requiring participants to indicate whether they might currently have a problem “like” the one described in the vignette. Because the vignette employed featured the use of self-induced vomiting, it is possible that some participants who did in fact recognise a problem with their eating responded in the negative because they did not currently engage in self-induced vomiting. However, this would not explain why other behaviours featured - such as binge eating - were not associated with self-recognition or why self-induced vomiting was the only variable associated with self-recognition in multivariable analysis. Further, there was no association between the type of eating problem - BN-type, BED-type or compensatory-type - and self-recognition. Nevertheless, it would be helpful to address this issue in future research, for example, by varying vignette content. Second, the finding that self-induced vomiting, but not laxative misuse, was associated with self-recognition may need to be interpreted with caution, given the small number of participants who reported laxative misuse but not self-induced vomiting. In practice, however, this concern may be academic because the use of laxatives in the absence of self-induced vomiting is uncommon (Mond, Hay, Rodgers, Owen, & Mitchell, 2006a). Third, probable eating disorder cases were identified on the basis of self-report assessment. Although interview assessment would have been preferable, participants identified as probable eating disorder cases in the present study had very high levels of eating disorder and comorbid psychopathology and the criteria employed in identifying these participants have been validated in several previous, community-based studies (Mond & Arrighi, 2012; Mond, Hay, Darby, et al., 2009; Mond, Marks, et al., 2007). Fourth, the current study research, like that of Mond, Rodgers, et al. (2006), included only female participants. In light of recent evidence suggesting increases in the prevalence of bulimic behaviours in men (Hay, Mond, Buttner, & Darby, 2008), and given that binge eating may be as common in men as in women (Hay et al., 2008; Hudson et al., 2007; Mond & Hay, 2007; Striegel et al., 2012), it would be of interest to conduct similar

research in a community sample of young men with symptoms of BN and/or BED. Finally, since both the present study and that of Mond, Rodgers, et al. (2006) were conducted in Australia, it would be of interest to replicate the present findings among young women with eating disorder symptoms in other countries.

Conclusions

In sum, the present findings provide further support for the hypothesis that young women with bulimic-type eating disorder symptoms may be less likely to recognise a problem with their eating when self-induced vomiting is not present and that this may be a barrier to help seeking. Health promotion and early intervention programs may need to address the perception that, among young women of normal or above-average body weight, only eating problems that involve self-induced vomiting are pathological.

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Appendix

Naomi is a 19-year-old second year arts student. Although mildly overweight as an adolescent, Naomi's current weight is within the normal range for her age and height. However, she *thinks* she is overweight. Upon starting university, Naomi joined a fitness program at the gym and also started running regularly. Through this effort she gradually began to lose weight. Naomi then started to "diet," avoiding all fatty foods, not eating between meals, and trying to eat set portions of "healthy foods," mainly fruit and vegetables and bread or rice, each day. Naomi also continued with the exercise program, losing several more kilograms. However, she has found it difficult to maintain the weight loss and for the past 18 months her weight has been continually fluctuating, sometimes by as much as 5 kilograms within a few weeks. Naomi has also found it difficult to control her eating. While able to restrict her dietary intake during the day, at night she is often unable to stop eating, bingeing on, for example, a block of chocolate and several pieces of fruit. To counteract the effects of this bingeing, Naomi takes water tablets. On other occasions, she vomits after overeating. Because of her strict routines of eating and exercising, Naomi has become isolated from her friends.

4.1. Background to Study Two

Having confirmed that self-recognition of disordered eating may be poor among young adult women with probable bulimic-type eating disorders, particularly among women who do not engage in self-induced vomiting, and that this may be a factor in low uptake of treatment, attention was turned to replication of these findings in a younger - i.e., adolescent - population. This additional research was considered important for two reasons.

First, the onset of bulimic-type eating disorders typically occurs in late adolescence or early adulthood, and adolescence is known to be a high-risk period in terms of transitions from bulimic behaviours to sub-threshold disorders and from sub-threshold to full-syndrome disorders (Hoek, 2006; Swanson et al., 2011). Hence, adolescence may be a key time period in terms of interventions to reduce the health burden of eating-disordered behaviour. While the prevalence of disorders meeting formal diagnostic criteria for bulimia nervosa and binge eating disorder may be relatively low in adolescents, in the order to 2.0-2.5% (Swanson et al., 2011), the prevalence of bulimic behaviours and of sub-threshold conditions is far higher (Allen, Byrne, La Puma, McLean, & Davis, 2008; Stock et al., 2007).

Second, findings from at least one previous study suggested that self-recognition of disordered eating among adolescents with eating disorder symptoms may indeed be problematic. Mond, Marks, et al. (2007) found, in a school-based sample of 36 female adolescents with a probable eating disorder, that only half of participants believed that they currently had an eating problem. Sample size in this study was too small, however, to permit analysis of factors associated with self-recognition and there was no assessment of help-seeking intentions or behaviour.

If it could be shown that findings relating to self-recognition of bulimic pathology observed in young adult women were evident during adolescence, then there would be a stronger case not only for the development of interventions to improve poor mental health literacy relating to bulimic-type eating disorders, but also for implementation of such interventions early in life.

Chapter Five

Study Two: Poor Self-Recognition of Disordered Eating Among Girls with Bulimic-Type Eating Disorders: Cause for Concern?

This study was accepted for publication on the 19th June 2014 in “Early Intervention in Psychiatry”. The reference of this paper is:

Gratwick-Sarll, K., Bentley, C., Harrison, C., & Mond, J.M. (2014). Poor self-recognition of disordered eating among girls with bulimic-type eating disorders: Cause for concern? *Early Intervention in Psychiatry*. doi: 10.1111/eip.12168

Abstract

Bulimic-type eating disorders, namely, disorders involving the regular occurrence of binge eating and/or extreme weight-control behaviours, are common among adolescent and young adult women and are associated with high levels of distress, impairment and low uptake of treatment. One possible reason for this is that individuals with these disorders do not recognise a problem with their eating. We sought to examine self-recognition of disordered eating - and associated factors - among female adolescents with bulimic-type eating disorders (n=139) recruited from a large, population-based sample. A vignette of a fictional character with bulimia nervosa symptoms was presented, followed by a series of questions addressing the nature and treatment of the problem described. One of these questions required participants to indicate whether they currently had a problem such as the one described. Self-report measures of eating disorder symptoms, general psychological distress and quality of life were also completed. More than half of participants (58%) did not believe that they currently had a problem with their eating. In multivariable analysis, impairment in emotional wellbeing and self-induced vomiting were the only variables independently associated with self-recognition. Participants who recognised a problem with their eating were more likely to have sought treatment for an eating problem than those who did not. Recognition of disordered eating among adolescents with bulimic-type eating disorders may be poor and this may be a factor in low uptake of mental health care. Health promotion efforts may need to address the misconception that only bulimic-type disorders involving self-induced vomiting are pathological.

Bulimic-type eating disorders, namely, bulimia nervosa, binge eating disorder and variants of these disorders, are common in adolescent and young adult women and associated with high levels of distress and disability as well as low uptake of mental health care (Field et al., 2012; Hart, Granillo, Jorm, & Paxton, 2011; Jenkins, Hoste, Meyer, & Blissett, 2011). The defining features of these disorders are extreme concerns about (“overvaluation” of) weight or shape accompanied by recurrent episodes of binge eating and/or extreme weight-control behaviours (American Psychiatric Association (APA), 2013; Mond, Hay, Rodgers, Owen, & Beumont, 2004a). Extreme weight-control behaviours include “purging” behaviours, namely, self-induced vomiting and laxative misuse, and non-purging behaviours, such as, extreme dietary restriction and excessive exercise. Bulimia nervosa is characterised by binge eating and extreme weight-control behaviours, whereas binge eating disorder is characterised by binge eating in the absence of extreme weight-control behaviours. A third category of bulimic-type disorder, “compensatory eating disorder”, involves the use of extreme weight-control behaviours in the absence of binge eating (Mond, 2013).

Several reasons for the low uptake of mental health care among individuals with bulimic-type eating disorders have been identified, namely; shame, denial, ego-syntonic aspects of certain bulimic behaviours, and lack of awareness/understanding of the nature and/or treatment of disordered eating among individuals affected, the public and health professionals (Hepworth & Paxton, 2007; Linville, Benton, O’Neil, & Sturm, 2010; Mond et al., 2009; Mond, Hay, et al., 2010; Mond, Hay, Rodgers, & Owen, 2008; Serpell & Treasure, 2002). Likely reasons for poor awareness and/or understanding of bulimic-type eating disorders include the fact that these disorders: (i) are relatively new to the psychiatric nomenclature (American Psychiatric Association, 2013); (ii) occur among individuals of normal or above-average body weight, that is, in the absence of the conspicuously low body weight and associated medical conditions characteristic of anorexia nervosa (AN) (Katzman, 2005); and (iii) do not have the same association with fame and glamour as anorexia nervosa and have therefore received comparatively little attention in the popular media (Striegel-Moore & Franko, 2003).

Such factors likely contribute to a lack of awareness of eating-disordered behaviour, identified in recent research as a problematic aspect of “mental health literacy” amongst individuals with bulimic-type eating disorders. One study of self-recognition of disordered eating among women with bulimic-type eating disorders recruited from a large, general population sample, found that less than half (48.1%) of participants believed that they currently had a problem with their eating (Mond, Rodgers, Hay, & Owen, 2006). Further, self-recognition was strongly linked to the occurrence of purging behaviours. Participants who reported engaging in self-induced vomiting were significantly more likely to recognise a problem with their eating than those who did not, even after controlling for overall levels of eating disorder and comorbid psychopathology. Self-recognition of an eating problem was, in turn, associated with help seeking, namely, women who recognised a problem with their eating were significantly more likely to have sought professional treatment for an eating problem than those who did not.

These findings, which have recently been replicated in a different sample of young adult women (Gratwick-Sarll, Mond, & Hay, 2013), suggest that, among individuals with bulimic-type eating disorders, conditions that involve purging may tend to be seen as pathological whereas those that do not, namely, binge eating disorder and the “non-purging” form of bulimia nervosa, may be more likely to be seen as mild or even normative. A perception of this kind may not be surprising, given that the occurrence of purging behaviours has, historically, been taken to indicate a more severe disorder among individuals with bulimia nervosa (and those with anorexia nervosa), perhaps because of the greater risk of medical complications associated with these behaviours (Mond, Hay, Rodgers, Owen, & Mitchell, 2006b). However, evidence to support this premise is limited. Rather, bulimic-type eating disorders have been found to be associated with high levels of distress and disability irrespective of the occurrence of purging (Mond et al., 2004a). Hence, the perception that only bulimic-type eating disorders that involve purging are pathological, to the extent that this exists, is concerning.

To our knowledge, no study has examined whether recognition of disordered eating among adolescents with bulimic-type eating disorders is similarly poor or whether the occurrence of purging behaviours similarly predicts self-recognition of disordered eating in this population. Given that bulimic-type eating disorders typically have their onset in adolescence or early adulthood, replication of these findings in an adolescent population would indicate the need for school-based health promotion programs to improve awareness and understanding of the nature and treatment of bulimic-type eating disorders (Kelly, Jorm, & Wright, 2007; Mond & Marks, 2007; Rickwood, Deane, & Wilson, 2007). Ideally, research of this kind would be conducted in a general population sample, so as to avoid problems of sampling bias associated with the use of clinical samples, while also permitting analysis of the association between self-recognition and help seeking (Mond, Rodgers, et al., 2006). In a study of adolescents' knowledge and beliefs about BN, Mond and Marks (2007) suggested that self-recognition of disordered eating was indeed poor, however the number of participants with eating disorder symptoms in this study was too small to permit analysis of variables associated with self-recognition and/or help seeking.

With these considerations in mind, the goal of the current study was to examine self-recognition of disordered eating - and the factors associated with this - among adolescents with bulimic-type eating disorders. Based on the findings of Mond, Rodgers, et al. (2006) and Gratwick-Sarll et al. (2013), in young adult women, it was hypothesised, first, that a substantial proportion of adolescents with bulimic-type eating disorders would fail to recognise a problem with their eating; second, that the occurrence of purging behaviours would be the best predictor of self-recognition; and third, that self-recognition would be associated with help seeking behaviour.

Method

Study design and participants

Participants were recruited as part of the *ACT Schools Mental Health Literacy Survey*, a cross-sectional study of knowledge and beliefs concerning eating-disordered

behaviour, actual eating-disordered behaviour, and psycho-social functioning among male and female secondary school students attending schools in the Australian Capital Territory (ACT) region of Australia. The ACT includes the (Australian capital) city of Canberra (population of approx. 375,000 in 2012) (ABS, 2013).

Of 45 secondary schools in the ACT region, all but five were invited, via their principals, to participate in the study. Twelve schools (30.0% of all schools approached), which varied in terms of type (Government, Independent, Catholic), location and the numbers of students at the school, agreed to participate. Government schools were somewhat under-represented among participating schools when compared with all ACT schools (50.0% vs. 62.8%), whereas Independent schools were somewhat over-represented (33.3% vs. 23.3%) (Catholic schools: 16.3% vs. 14.0%) (Education and Training Directorate, 2012). Total enrolments at participating schools ranged from 589 to 1482, whereas the number of participants at these schools ranged from 18 to 418 ($M = 147.5$, $SD = 37.5$). The sample was also diverse in terms of the geographical locations of participating schools (ABS, 2013). Among schools that chose not to participate, the main reasons given for this were commitments to other research projects, lack of intra-curricular time and concerns relating to student workload.

Within participating schools, recruitment methods were driven primarily by logistical considerations and were therefore variable. In some cases, principals gave permission for the whole of their high school (years 7-10) or college (years 11 and 12) students to participate. In other cases, permission was given to contact the heads of specific faculties (e.g. health, physical education, psychology). The decision was then made by the faculty head as to which of their classes would participate. All students in classes selected for participation who attended class on the day(s) assigned for data collection were invited to complete a printed, self-report questionnaire, in their classrooms, during school hours and under the supervision of a teacher and one or more members of the research team.

The questionnaires included assessment of knowledge and beliefs about eating disorders (Mond, Hay, et al., 2010; Mond et al., 2008; Mond, Hay, Rodgers, & Owen,

2011; Mond et al., 2007), eating-disordered behaviour, general psychological distress, quality of life and basic socio-demographic information, namely, age, sex, country of birth, first language and residential post-code. Body mass index (BMI) (kg/m^2) was calculated from self-reported height and weight. A separate, detachable section of the survey included contact details of the researchers and of potentially helpful sources of information for students who might be experiencing an eating or other mental health problem. Pilot testing, conducted in a sample of 46 male and 71 female students recruited from a single school, ensured that the survey material was appropriate for participants' reading/comprehension level and that there were no items for which unacceptably high rates of missing data would be likely. The total time for survey administration, including debriefing, was approximately 40 minutes.

The study was presented as an opportunity for schools to promote "eating disorders mental health literacy" among their students and no remuneration was provided. Both students and their parents were informed, in advance, as to the study aims and methods and of their right to decline participation. An "opt-out" consent process was employed for parents whereas an "opt-in" process was employed for students. The study design and methods were approved by the Australian National University Human Research Ethics Committee, the ACT Department of Education and Training and the Catholic Education Office.

Completed questionnaire were received from 1749 students, a participation rate (number of students completing questionnaires divided by number of students approached to complete questionnaires) of 78.7%. Data for nine participants who were less than 12 years of age or greater than 18 years and for a further 70 participants (4.0%) who were found to have unacceptably high levels of missing or corrupt data were excluded. The final sample therefore comprised 1670 students aged 12-18 years. Of these, 1135 (68.0%) were female, 531 were male and 4 did not indicate their gender. The over-representation of female students, which reflected greater perceived relevance of the study material among the principals of all girls schools and/or among the heads of faculties (e.g., psychology) in which female students were over-

represented, was anticipated and was advantageous in addressing study aims that dictated relatively large numbers of participants with eating disorder symptoms, including those of the current study.

The sample comprised 3.6% of all male secondary school students in the ACT in 2012 and 7.8% of all female secondary school students (Education and Training Directorate, 2012). The proportion of male study participants who were in high school (years 7-10) (as opposed to college: years 11-12) was somewhat higher than the proportion of all ACT male secondary school students in high school (77.5% vs. 66.1%), whereas the proportion of female participants in high school was similar to that of all ACT female secondary school students in high school (67.3% vs. 66.2%) (total sample: 70.6% vs. 66.2%). Reflecting the demographic profile of the ACT region (ABS, 2013), the vast majority of participants were born in Australia (88.3%) and had English as a first language (90.4%). The mean (SD) ages of male and female participants were, respectively, 14.85 (1.70) years and 15.51 (1.63) years. The mean (SD) BMI of the 481 male participants (90.6% of the total sample) who provided details of height and weight was 20.52 (3.58), whereas the mean (SD) BMI of the 1007 female participants (88.7% of the total sample) who provided details of height and weight was 20.68 (3.57).

Participants in the current study were the 139 female participants (12.2% of all female participants) who were identified as probable cases of bulimic-type eating disorders using an operational definition employed in previous research, namely, the overvaluation of weight or shape in conjunction with the regular occurrence of any eating disorder (i.e., binge eating and/or extreme weight-control) behaviour as assessed by the Eating Disorder Examination Questionnaire (see below). In the absence of interview assessment, participants in this subgroup are designated “probable” rather than “true” eating disorder cases. Nevertheless, this definition has been found to identify a highly symptomatic subgroup of individuals, in terms of eating disorder and comorbid psychopathology, in several previous community-based studies of young women (Gratwick-Sarll et al., 2013; Mond & Arrighi, 2012; Mond et al., 2009; Mond, Hay, et al., 2010). Males who met the criteria for probable case were not

considered because the number of these participants in this subgroup ($n = 9$; 1.7%) was too small to permit meaningful analysis.

Study Measures

Eating Disorder Examination Questionnaire (EDE-Q)

The EDE-Q (Fairburn, 2008; Fairburn & Beglin, 1994) is a 36-item self-report measure that assesses the occurrence and frequency of eating disorder features during the past 28 days. Scores on each of four subscales, as well as a global score, may be derived from 22 items assessing core attitudinal features, namely, restraint, eating concern, weight concern and shape concern. Scores on these items (and subscales) range from “0” to “6”, with higher scores indicating higher symptom levels (Mond, Hay, Rodgers, Owen, & Beumont, 2004b). As in previous research (Mond et al., 2007; White, Haycraft, Goodwin, & Meyer, 2014), very high rank-order correlations were observed between scores on the Weight and Shape Concerns subscale ($r = 0.92$). Hence, items of these subscales were combined to form a single, Weight/Shape Concerns scale. Items comprising the EDE-Q subscales have been found to have very good internal consistency, test-retest reliability and convergent validity in clinical and general population samples/various study populations (Berg, Peterson, Frazier, & Crow, 2012; Mond, Hay, Rodgers, Owen, & Beumont, 2004c). Cronbach’s alpha in the present study sample ranged from 0.84 (Eating Concerns) to 0.97 (global score).

Remaining items of the EDE-Q assess the occurrence and frequency of eating disorder behaviours, namely, binge eating and the use of self-induced vomiting, laxative misuse and excessive exercise to influence weight or shape. In the current study, subjective binge eating and diet pill use were also assessed (Mond, Mitchison, & Hay, 2014). Subjective binge eating refers to episodes of perceived overeating in which a loss of control is experienced but the amount of food consumed is not unusually large (Mond, Latner, Hay, Owen, & Rodgers, 2010). In DSM-5 (APA, 2013), “binge eating” requires both consumption of an “objectively large” amount of food and a loss of control over eating during the eating episode. In children and adolescents, however, the

experience of loss of control over eating has been found to be a better index of eating disorder and comorbid psychopathology than the amount of food consumed (Matheson et al., 2012). Hence, many authorities believe that “loss-of-control eating”, defined as the occurrence of binge and/or subjective binge eating, may be a more appropriate criterion for BN and BED in this population and this was the approach taken in the current study (Matheson et al., 2012)

For binge eating, self-induced vomiting and misuse of laxatives or diet pills, “regular occurrence” was defined as, on average, at least weekly (during the past four weeks) (APA, 2013). In view of the low prevalence of self-induced vomiting and laxative misuse, however (Mond, 2014), and consistent with previous studies (Gratwick-Sarll et al., 2013; Mond, Rodgers, et al., 2006), only any occurrence of these behaviours was considered in the current study. Regular extreme dietary restriction was defined, using an item of the EDE-Q Restraint subscale, as “going for long periods of time (for example, 8 hours or more in the daytime) without eating anything at all to control weight or shape” at least three times per week, whereas regular excessive exercise was defined as “exercising really hard or in a driven or compulsive way as a means of controlling your weight or shape” at least five times per week (Lavender, De Young, & Anderson, 2010; Mond, Hay, et al., 2006b; Reas, Schoemaker, Zipfel, & Williamson, 2001). The overvaluation of weight or shape was defined as a score of ≥ 5 on either (or both) of either of the EDE-Q items assessing this construct (Grilo, Masheb, & White, 2010; Mond & Marks, 2007). As in previous studies (Carter, Stewart, & Fairburn, 2001; Mond et al., 2007), minor changes to the wording of some questions were made in order to ensure the suitability of the instrument for an adolescent population.

Kessler (10-item) Psychological Distress Scale (K-10)

The K-10 is a 10-item measure of general psychological distress developed for use as a screening instrument in epidemiological studies of mental disorders and widely used for this purpose (Kessler et al., 2003; Mond, Myers, Crosby, Hay, & Mitchell, 2010). In Australia, it is also used as an outcome measure for individuals

treated in community mental health services and for routine population health monitoring (ABS, 2013) and it has been used in both adolescent and adult populations (Huang, Xia, Sun, Zhang, & Wu, 2009; Wake et al., 2010). Participants are required to indicate the frequency of occurrence of each of 10 symptoms of anxiety or depression during the past four weeks, for example: "In the past four weeks (28 days), how often have you felt so sad that nothing could cheer you up", and "In the past four weeks (28 days), how often did you feel so nervous that nothing could calm you down?" Responses are scored on a five-point, Likert-type scale ranging from "none of the time" ("1") to "all of the time" ("5"). Total scores therefore range from 10 to 50, with higher scores indicating higher levels of distress. The K-10 has very good psychometric properties, including high internal consistency and demonstrated validity in predicting clinically significant levels of distress in general population samples (Kessler et al., 2003; Mond, Myers, et al., 2010). The Cronbach's alpha for participants in the present study sample was 0.91.

Pediatric Quality of Life Inventory (15-item) (PedsQL™ SF15)

The Quality of Life study described in this paper was carried out using the PedsQL™ SF15, developed by Dr. James W. Varni. It is a 15-item self-report measure developed specifically for use in paediatric populations (Chan, Mangione-Smith, Burwinkle, Rosen, & Varni, 2005; Varni, Burwinkle, Seid, & Skarr, 2003). Participants are asked how true each of a series of 15 statements were for them during the past four weeks, with items designed to address individuals' perceived functioning in each of four domains: physical health (5 items); emotional wellbeing (4 items); social functioning (3 items); and academic (school) functioning (3 items). Examples of items from each domain are: "It is hard for me to walk more than one block" (physical); "I feel sad or blue" (emotional); "I have trouble getting along with other teenagers" (social); and "I find it hard to pay attention in class" (academic). Responses are scored on a five-point, Likert-type scale ranging from "never" ("1") to "always" ("5"), with higher scores indicating poorer perceived functioning in the domain concerned. Domain scores were calculated as the simple average of scores on the specific items

comprising each domain. The PedsQL SF15 has been found to have good psychometric properties (including high internal consistency, test retest reliability and convergent and discriminant validity), comparable to the longer (23-item) measure from which it was derived (Chan et al., 2005; Varni et al., 2003). Cronbach alphas in the present study sample ranged from 0.80 (physical health subscale) to 0.89 (total scale) for participants.

Assessment of Self-Recognition

At the beginning of the questionnaire, participants were presented with a vignette of a fictional young woman ("Kelly") with symptoms characteristic of bulimia nervosa, namely, binge eating and (both purging and non-purging) extreme weight-control behaviours (see Appendix). As in previous research employing this method (Gratwick-Sarll et al., 2013; Hay, Mond, Buttner, & Darby, 2008; Mond & Arrighi, 2011; Mond, Hay, et al., 2010; Mond, Rodgers, et al., 2006), efforts were made to ensure that key criteria for the disorder were met while avoiding the use of overly technical or otherwise unfamiliar language.

Presentation of the vignette was followed by a series of questions concerning the problem described for example, "How distressing do you think it would be to have the problem described?" and "How many girls in your school do you think might have the problem described?" (Hay et al., 2008; Mond & Arrighi, 2011; Mond, Hay, et al., 2010). A single item assessing self-recognition, namely: "Do you think that you might currently have a problem like Kelly's?" was embedded in this list of questions.

Participants who responded in the affirmative to this question constituted the "recognisers" subgroup, whereas participants who responded "no" to this question were designated "non-recognisers". To assess help-seeking, participants were asked if they had ever sought help for a problem like Kelly's from a health professional, such as a counsellor or doctor, and also whether they believed that they should seek such treatment.

Statistical analysis

Participants who recognised a problem with their eating were compared with those who did not with respect to age, BMI, demographic characteristics, eating disorder psychopathology (EDE-Q subscales and the occurrence of eating disorder behaviours), general psychological distress, quality of life and help seeking. Independent samples t-tests were used for comparisons involving continuous outcome variables, whereas differences between groups on categorical variables were examined using chi-square tests. Binary logistic regression analysis was used to identify the variable(s) most strongly associated with recognition of an eating problem. A significance level of 0.05 was used for all tests with the exception of the variable inclusion criteria for the regression analysis (as outlined below). No adjustment was made for inflation of Type-I error associated with the use of multiple comparisons since doing so would have further increased the likelihood of Type-II error, namely, the likelihood of failing to detect associations between key study variables where these exist (Perneger, 1999). All analysis was conducted using SPSS Version 20.0.

Results

Mean age, BMI, levels of eating disorder psychopathology (EDE-Q subscale scores and occurrence of eating disorder behaviours) and scores on measures of general psychological distress (K-10) and quality of life (PedsQL subscales) for study participants and for females who did not have an eating disorder (n = 996) are shown in Table 1.

Table 1: Descriptive statistics: mean (SD) age, BMI, scores on measures of eating disorder psychopathology, general psychological distress and functional impairment, and frequency of (regular) occurrence of specific eating disorder behaviours for study participants (n=139) and for women who did not have eating disorder symptoms (n=996).

	No Eating Disorder (n=996)	Bulimic-Type ED (n=139)
	Mean (SD)	Mean (SD)
Age	15.44 (1.66)	15.97 (1.22)
BMI (kg/m ²)	20.45 (3.49)	22.34 (3.64)
Eating Disorder Examination subscales		
Restraint	1.13 (1.26)	3.92 (1.39)
Eating concern	0.89 (1.04)	3.49 (1.33)
Weight and shape concern	2.04 (1.61)	5.30 (0.60)
Global score	1.47 (1.24)	4.43 (0.85)
PedsQL Physical Health ⁱⁱ	1.67 (0.68)	1.97 (0.88)
PedsQL Social Health ⁱⁱⁱ	1.77 (0.78)	2.35 (1.08)
PedsQL Emotional Health ⁱⁱⁱ	2.37 (0.87)	3.27 (0.85)
PedsQL Academic Performance ⁱⁱⁱ	2.72 (0.94)	3.46 (1.03)
K-10 ^{iv}	21.45 (7.62)	31.41 (9.67)
	%	%
Objective binge eating ^{iv}	12.3	46.8
Subjective binge eating ^{iv}	7.2	49.6
Loss of control eating ^{iv}	17.4	77.7
Self-induced vomiting ^{iv}	3.7	26.6
Laxative misuse ^{iv}	0.7	12.2
Diet pills ^{iv}	0.6	13.7
Extreme dietary restriction ^v	5.5	54.7
Excessive exercise ^v	3.2	20.9

i) Pediatric Quality of Life Physical Health ii) Pediatric Quality of Life Psychosocial Health iii) Kessler Psychological Distress Scale iv) For objective and subjective binge eating, self-induced vomiting and misuse of laxatives or diet pills, “regular” was defined as at least weekly. Loss of control refers to the feeling experienced when engaging in binge eating v) Regular “extreme dietary restriction” was defined as going without food for periods of 8 or more waking hours in order to influence weight or shape on average at least 3 times per week, whereas regular “excessive exercise” was defined as exercising hard in order to influence weight or shape on average at least 5 times per week.

Approximately half of participants (n = 65, 46.8%) reported both regular loss of control (i.e. objective and/or subjective binge) eating and one or more regular extreme weight-control behaviours during the past four weeks and would therefore be designated as cases of bulimia nervosa or sub-threshold bulimia nervosa, whereas approximately one-third of participants (n = 43, 30.9%) of participants reporting regular loss of control eating in the absence of regular extreme weight-control behaviours and would therefore be designated as cases of binge eating disorder or sub-threshold

binge eating disorder. Remaining participants ($n = 31$, 22.3%) reported one or more regular extreme weight-control behaviours in the absence of regular loss of control eating episodes and would therefore be designated as cases of compensatory or “purging” disorder. Small to moderate positive correlations (mean phi coefficient = 0.15) were observed between the occurrence of different eating disorder behaviours as would be expected in a non-clinical sample (Mond et al., 2004c).

Bivariate analysis of variables associated with self-recognition

Two participants did not answer the question addressing self-recognition. Of the remaining 137 participants, 58 (42.3%) recognised a problem with their eating, whereas 79 participants (57.7%) reported that they did not currently have a problem like Kelly's. As can be seen in Table 2, participants who recognised an eating problem had higher scores on the Restraint and Eating Concerns subscales (and global score) of the EDE-Q, higher levels of general psychological distress and impairment in emotional wellbeing, and were more likely to report the use of self-induced vomiting as a means of controlling weight or shape, than those who did not. There were no differences between groups with respect to country of birth ($\chi^2_1 = 0.83$, $p = 0.42$), first language ($\chi^2_1 = 2.08$, $p = 0.19$) or type of school attended ($\chi^2_1 = 3.52$, $p = 0.31$), nor an association between type of eating disorder – bulimia nervosa-type, binge eating disorder-type or compensatory-type - and self-recognition ($\chi^2_1 = 2.36$, $p = 0.31$).

Participants who recognised a problem with their eating were more likely to have sought treatment from a health professional for a problem like Kelly's (24.1% vs. 8.9%, $p = 0.01$), and tended to be more likely to believe that they should seek such treatment (29.3% vs. 16.7%, $p = 0.07$), than those who did not. Further, participants who believed that they should seek professional treatment for problem like Kelly's were more likely to have sought such treatment than those who did not (36.7% vs. 9.3%, $\chi^2_1 = 13.67$, $p < 0.01$). However, less than one quarter ($n=30$, 21.6%) of participants believed that they should seek such treatment and only 21 participants (15.1%) had ever sought such treatment.

Table 2: Mean (SD) age, BMI, scores on measures of eating disorder psychopathology, general psychological distress and functional impairment, and frequency of (regular) occurrence of specific eating disorder behaviours for participants who recognised a problem with their eating (n=58) and those who did not recognise a problem with their eating (n=79)

	Non-Recognisers (n=79)	Recognisers (n=58)		
	Mean (SD)	Mean (SD)	t	p
Age	15.84 (1.27)	16.13 (1.14)	-1.36	0.17
BMI (kg/m ²)	22.80 (3.83)	21.72 (3.37)	1.59	0.11
			z	p
Eating Disorder Examination subscales				
Restraint	3.62 (1.40)	4.34 (1.28)	-3.07	.00
Eating concern	3.23 (1.28)	3.86 (1.33)	-2.79	.00
Weight and shape concern	5.26 (0.62)	5.38 (0.59)	-1.16	.24
Global score	4.25 (0.82)	4.69 (0.82)	-3.02	.00
PedsQL Physical Health ⁱⁱ	2.00 (0.96)	1.94 (0.80)	0.37	.70
PedsQL Social Health ⁱⁱⁱ	2.35 (1.03)	2.39 (1.14)	-0.19	.84
PedsQL Emotional Health ⁱⁱⁱ	3.13 (0.86)	3.50 (0.76)	-2.55	.01
PedsQL Academic Performance ⁱⁱⁱ	3.51 (0.92)	3.42 (1.15)	0.49	.62
K-10 ^{iv}	30.11 (10.55)	33.57 (7.84)	-2.20	.02
	%	%	χ^2	p
Objective binge eating	46.8	46.6	0.00	0.97
Subjective binge eating	48.1	51.7	0.17	0.67
Loss of control eating	75.9	79.3	0.21	0.64
Self-induced vomiting	17.7	37.9	7.05	0.00
Laxative misuse	8.9	17.2	2.16	0.14
Diet pills	12.7	15.5	0.22	0.63
Extreme dietary restriction	50.6	60.3	1.27	0.25
Excessive exercise	21.5	20.7	0.01	0.90

i) Pediatric Quality of Life Physical Health ii) Pediatric Quality of Life Psychosocial Health iii) Kessler Psychological Distress Scale iv) Degrees of freedom (df) = 1 iv) Participants responded to the question related to the vignette presented in the study "Have you ever seen a health professional (like a doctor or counselor) for a problem like Kelly's?" v) Participants responded to the question related to the vignette presented in the study "Do you think you might need to see a health professional (like a doctor or counselor) for a problem like Kelly's?"

Multivariable analysis of variables associated with self-recognition

For the regression analysis, all variables for which significant or nearly significant differences between groups were observed in bivariate analysis were entered, using a backward variable selection method, into logistic regression model

(with the exception of the EDE-Q global score, for which multicollinearity with the EDE-Q subscales was observed). A conservative threshold for “nearly significant”, namely, $p < 0.20$, was employed for this purpose (Katz, 2006). As can be seen in Table 3, only impairment in emotional wellbeing, as measured by the Emotional Functioning subscale of the PedsQL, and the occurrence of self-induced vomiting were included in the final model. Although odds ratios for these variables were similar, greater variability associated with self-induced vomiting was such that the contribution of this variable did not reach statistical significance ($p = 0.09$).

Table 3. Results of a logistic regression analysis of variables associated with self-recognition of an eating problem among participants with bulimic-type eating disorders (n=136).

Covariates	Odds Ratio (95% CI)	p
Emotional wellbeing ⁱ	1.83 (1.09, 3.06)	0.02
Self-induced vomiting ⁱⁱ	2.18 (0.88,5.42)	0.09

i) As measured by the Emotional Functioning subscale of the (15-item) Pediatric Quality of Life Inventory (PedsQL-SF15) ii) Any occurrence of self-induced vomiting to influence weight or shape during the past four weeks as measured by the Eating Disorder Examination Questionnaire (EDE-Q)

Discussion

Summary of main findings

We examined self-recognition of disordered eating among community cases of adolescent girls with bulimic-type eating disorders (n=139). There were three main findings. First, despite high levels of eating disorder and comorbid psychopathology, a majority of participants did not believe that they currently had a problem with their eating. Second, the variables most strongly associated with self-recognition in bivariate analysis were overall levels of eating disorder psychopathology, general psychological distress, perceived impairment in emotional wellbeing and the use of self-induced vomiting as a means of controlling weight or shape. Third, in multivariable analysis, the only variables independently associated with self-recognition, were impairment in emotional wellbeing and the occurrence of self-induced vomiting. Participants who engaged in self-induced vomiting during the past four weeks were approximately twice as likely to recognise a problem with their eating as those who did not, controlling for

covariates. Finally, there was a significant association between problem recognition and help seeking, namely, participants who recognised a problem with their eating were more likely to have sought treatment for an eating problem than those who did not.

Study implications

To our knowledge, this is the first study to explore adolescent girls' recognition of their own eating disordered behaviour. The findings suggest that, among adolescent girls with bulimic-type eating disorders, recognition of an eating problem is linked to the use of self-induced vomiting as a means of controlling one's weight or shape. Hence, the findings are consistent with the hypothesis that individuals with bulimic-type eating disorders that do not involve the use of self-induced vomiting may be more inclined to see their eating and/or weight-control behaviours as benign or normative rather than as symptomatic of an eating disorder. Self-recognition of an eating problem is, in turn, associated with help seeking. As would be expected, given that the uptake of mental health care is known to be low among individuals with bulimic-type eating disorders and the current research was conducted in adolescents, few participants had ever sought treatment from a health professional for an eating problem. Indeed, for many of the participants in the current study the onset of their eating-disordered behaviour is likely to have occurred in the past 12 months. Nevertheless, approximately one quarter of participants who recognised a problem with their eating had sought treatment for an eating problem from a health professional compared with less than 10% of participants who did not recognise a problem. This finding was consistent with outcomes from studies of mental health literacy relating to other mental health problems, in which individuals' knowledge and beliefs concerning the nature and treatment of mental health problems have been found to predict help seeking behaviour (Gulliver, Griffiths, & Christensen, 2010; Jorm, 2012).

The primary implication of this current finding is that efforts may be needed to improve community awareness of the nature and treatment of bulimic-type eating disorders. In particular, efforts may be needed to address the perception that, among

individuals with eating disorders who are of normal or above-average weight, only those presentations that involve self-induced vomiting are pathological. Thus far, eating disorders health promotion programs have been largely confined to selective prevention trials designed to prevent the development of eating disorders through the reduction of key risk factors, such as body dissatisfaction, low self-esteem and media literacy (Stice, Shaw, & Marti, 2007). While these efforts are important, they need to be complemented, in our view, with efforts to improve “eating disorders mental health literacy” and raise awareness of the importance of early, appropriate help seeking behaviour among individuals with symptoms, those with whom they interact and the community as a whole (Mond, 2014; Mond, Hay, et al., 2010; O'Dea, 2012). For school-based initiatives, a focus on mental health literacy more generally - i.e. without explicitly addressing eating disorder symptoms - may be warranted, given the constraints on curriculum time and given the potential for iatrogenic effects associated with eating-disorder-specific content (O'Dea, 2012). Gatekeepers, such as parents, teachers and school counsellors, might simultaneously receive training in eating disorders issues (Russell-Mayhew, Arthur, & Ewashen, 2007).

Although we can only speculate as to the source of the association between self-induced vomiting and self-recognition, it may be noted that bulimic-type disorders that do not involve self-induced vomiting have historically been viewed as being of marginal or uncertain clinical significance (Mond, 2013; Mond, Rodgers, et al., 2006). This premise remains embedded in classification schemes (Mond, 2013). Further, portrayal of eating disorders in the popular media has focused on the symptoms of low body weight and/or the occurrence of self-induced vomiting, to the exclusion of other presentations (Mond, 2014; Mond, Rodgers, et al., 2006). The finding that only self-induced vomiting - i.e. self-induced vomiting but not laxative misuse - was associated with self-recognition, which is consistent with findings from previous studies, may reflect a perception that self-induced vomiting is more pathological than laxative misuse (Mond, Hay, Rodgers, Owen, & Mitchell, 2006a), although the relative frequencies of the different behaviours may also be a factor. In the current study, any

occurrence of self-induced vomiting and any occurrence of laxative misuse were reported by 37 participants, and 17 participants, respectively (both: $n = 10$).

The finding that impairment in emotional wellbeing was the strongest independent “predictor” of self-recognition in the current study is also of interest. Although this finding was not observed in the studies of Mond, Rodgers, et al. (2006) or Gratwick-Sarll et al. (2013), it would not be surprising to find that the factors that determine specific aspects of mental health literacy and/or help seeking behaviour are different for adolescents than for adults (Mond et al., 2007; Rickwood, Deane, Wilson, & Ciarrochi, 2005). The current findings, when taken with those of earlier studies, suggest that adolescents’ awareness that their eating behaviour is problematic may be more closely linked to impairment in emotional wellbeing than is the case in adults. Findings in this regard may also depend on the measure of emotional wellbeing employed.

Study limitations and other methodological considerations

At least three limitations of the current research should be noted. First, self-recognition was assessed with a single item requiring participants to indicate whether they might have a problem “like” the one described in the vignette. Given that self-induced vomiting featured in the vignette, it is possible that some participants who did in fact recognise a problem with their eating responded in the negative because they did not currently engage in self-induced vomiting. In our view, the fact that only self-induced vomiting was associated with self-recognition, i.e. despite that fact that the vignette featured various other bulimic behaviours, and that there was no association between type of disorder – bulimic nervosa type, binge eating disorder type or compensatory eating disorder type - and self-recognition, argue against this interpretation. It would be possible to address the issue, in future research, by employing an alternative assessment of self-recognition and/or manipulating vignette content.

Second, probable eating disorder cases were identified on the basis of self-report, rather than interview, assessment. Self-report assessment of binge eating in

particular may be problematic (Fairburn & Beglin, 1994). However, in the current study, as in previous studies, probable eating disorder cases so identified had markedly elevated levels of eating disorder and comorbid psychopathology when compared with remaining participants.

Third, the cross-sectional design of the current study dictates that any inferences concerning the direction of the observed associations are tentative. In particular, it is possible that help seeking behaviours both influence and is influenced by self-recognition and other aspects of mental health literacy (Kelly et al., 2007). However, the weight of evidence supports the premise of a substantial influence of individuals' knowledge and beliefs on their help seeking behaviour (Klump, McGue, & Iacono, 2003; Rüsch, Evans-Lacko, Henderson, Flach, & Thornicroft, 2011).

Strengths of the current study were the recruitment of participants from a large, population-based sample, the use of established measures of eating disorder and comorbid psychopathology and the assessment of help seeking behaviour.

Conclusion

In sum, the current findings suggest that recognition of disordered eating among adolescents with bulimic-type eating disorders may be poor and that this may be a factor in low uptake of mental health care. Health promotion efforts may need to address the misconception that only bulimic-type disorders that involve self-induced vomiting are pathological.

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Appendix

Kelly is a 15-year-old student. She was a bit overweight when she was younger, but her current weight is normal for someone of her age and height. But Kelly feels fat. When she started Year 7, Kelly started going to the gym and running regularly. She slowly started to lose weight. Then Kelly started to "diet", by not eating any fatty foods, not eating between meals, and trying to eat only "healthy foods" (mostly fruit, vegetables, bread and rice) every day. Kelly also kept going to the gym and running, and she lost more weight. But Kelly has found it difficult to keep this going and her weight keeps changing, by as much as 5kg in a few weeks. Kelly has also found it difficult to control her eating. For example, she will follow her diet during the day, but then at night she will lose control and eat a whole loaf of bread, a tub of ice-cream and several pieces of fruit all at once. When this happens, Kelly takes laxatives or makes herself vomit, to try to cancel out the effects of overeating.

Chapter Six

General Discussion

6.1. Recapitulations of Research Aims, Methods, Results and Conclusions

The goal of the current research was to elucidate self-recognition of disordered eating and factors associated with this among young women with probable bulimic-type eating disorders. Young adult women were first considered in order to replicate findings from a previous study in this population of which the generalisability was unclear. A second study was then conducted in adolescent females, as bulimic-type eating disorders often have their onset during adolescence. In addition to this, the transition from bulimic behaviours to bulimic disorders often occurs during this time.

Participants in the first study were female university students ($n = 94$) with bulimic-type eating disorders recruited from campuses in Queensland and Victoria. Participants in the second study were female secondary school students ($n = 139$) with probable bulimic-type eating disorders recruited in the Australian Capital Territory region. The same methodology was employed in each study; namely, a vignette depicting a fictional character with symptoms of bulimia nervosa was presented, followed by a series of questions concerning aspects of the problem described. One of these questions assessed self-recognition by asking participants if they believed that they currently had a problem such as the one described. Participants in both studies also completed self-report measures of eating disorder and comorbid psychopathology, height and weight, and socio-demographic characteristics. Based on previous research conducted in a general population sample of young adult women, it was hypothesised that, in both studies, i) self-recognition of bulimic-type eating disorders would be poor, particularly among individuals not engaging in self-induced vomiting as a means of controlling weight or shape, and ii) that poor self-recognition would be associated with help-seeking behaviour, namely, lower uptake of professional treatment.

Both studies confirmed these hypotheses. Of interest is the finding that impairment in emotional wellbeing was, in addition to self-induced vomiting, associated with self-recognition in adolescents but not in adults. Further to this, in the adult study, there were no differences in either mental or physical impairment between non-recognisers and recognisers. In contrast, in the adolescent study, there was a

difference between recognition and non-recognition subgroups with respect to levels of emotional impairment (but not physical, social or academic impairment). One possible explanation for this discrepancy may be that disordered eating typically emerges during adolescence and may therefore have greater impact, in terms of distress and disability, at this time. In adult populations, by contrast, there would likely have been time for individuals to adapt to the occurrence of disordered eating over a period of time and, in turn, experience less distress and disability associated with such behaviour. It also is possible that the measures of emotional wellbeing employed in the adolescent study, namely, the Pediatric Quality of Life Inventory (Varni et al, 2003), is more sensitive to the sort of impairment in emotional wellbeing associated with eating disordered behaviour than that employed in the adult study (SF-12) (Ware et al., 1996).

Taken together, findings from these studies were considered to indicate the need for population-based interventions designed to improve awareness and understanding of the more commonly occurring, bulimic-type eating disorders, in order to increase the likelihood that early and appropriate treatment is received by those who need it.

6.2. Recapitulation of Study Limitations

Similar limitations were noted for both studies. Perhaps the most important of these was that self-recognition was assessed by the use of a single question which asked participants to indicate whether they might currently have a problem “like” the one described in the vignette. The main concern with this approach is that some participants who did in fact recognise a problem with their eating may have responded in the negative to the item concerned simply because they did not currently engage in self-induced vomiting, this being one of the behaviours featured in the vignette. In responding to this concern, it was noted that various bulimic behaviours - extreme dietary restriction, binge eating, excessive exercise, laxative misuse and self-induced vomiting - were mentioned in the vignette. Yet, of these different behaviours, only self-induced vomiting emerged as being strongly, and independently associated with self-

recognition. As has also been noted, it would be possible to address this potential limitation more directly in future research by manipulating vignette content and/or asking participants to identify the symptoms/behaviours that led them to conclude that they did or did not have a problem such as the one described. These alternative methods were not considered for the present research because it was considered important to replicate the methods employed in Mond, Rodgers, et al. (2006) original research in the first instance. It would also be helpful to give further thought to the source of the association between self-induced vomiting and self-recognition since clarification of this association would be helpful in informing interventions of the types outlined above. A similar limitation should be noted in relation to the assessment of help-seeking behaviour, in that this was assessed, in both studies, by means of a single question. Ideally a more comprehensive assessment of help-seeking behaviour would be undertaken in future research of this kind.

A second noteworthy limitation of the current research is that the assessment of eating disordered behaviour, including the identification of probable eating disorder cases, was confined to self-report measures. Since concordance between self-report and interview assessment of certain eating disorder features, such as binge eating, may be low, findings relating to both the status of probable eating disorders cases and associations between self-recognition and the occurrence of specific eating disorder features may need to be interpreted with caution. On the other hand, there is good information from previous research, in similar general population samples, supporting the validity of the self-report assessment of eating disorder features and probable eating disorder cases employed in the current research (Mond & Arrighi, 2011; Mond et al., 2009; Mond & Marks, 2007). Interview assessment of eating disorder features is generally considered to be preferable to self-report assessment, although this is not necessarily the case with purging behaviours (Mond, Hay, Rodgers, & Owen, 2007b) and in any case, interview assessment is typically not possible in large-scale, population-based studies. It is also important to acknowledge that different methods were used for the first study included in this dissertation to collect data, namely paper-

and-pencil, as well as online questionnaires. This was streamlined for the second study to reduce the likelihood of any possible effects that this may have had on the data.

The use of a cross-sectional study design is a third notable limitation of the current research. This is important when considering the observed associations between self-recognition and help-seeking behaviour. While self-recognition may influence help-seeking, it is also possible that help-seeking could influence self-recognition and other aspects of mental health literacy, or that associations exist in both directions. While prospective, population-based research is difficult to conduct, it would clearly be helpful in elucidating these different possible pathways.

An apparent contradiction in the current study findings might also be noted, namely, an association between self-induced vomiting and self-recognition, on the one hand, and no association between type of eating disorder – bulimic nervosa-type, binge eating disorder-type, and compensatory-type - on the other. Given that binge eating disorder entails, by definition, binge eating in the absence of regular extreme weight-control behaviours, lower self-recognition in this subgroup, when compared with the bulimia nervosa-type and compensatory-type subgroups, might have been expected. One possible interpretation of this apparent contradiction is that participants in the bulimia nervosa-type and compensatory-type subgroups reported not only purging behaviours but also non-purging forms of extreme weight control behaviours, thereby potentially diluting the association between the type of eating disorder presentation and self-recognition.

It should be reiterated that the current research was confined to adolescent and young adult females. The use of these “at-risk” subgroups was necessary in that it permitted examination of self-recognition in population-based samples without the need for very large sample sizes. However, in light of evidence from recent studies suggesting that the prevalence of bulimic behaviours may be increasing in males and in older women (McLean, Paxton, & Wertheim, 2011; Mond et al., 2014; Rosen, 2003), replication of the current research in these other populations will be an important direction for future research. Further, anorexia nervosa was not considered in the

current research due to its very low base rate in general population samples and the consequent difficulty of recruiting a subgroup of participants with this disorder for statistical analysis (Mond et al., 2004). Very large sample sizes would be required to address self-recognition of disordered eating among individuals with anorexia nervosa recruited from a general population sample (Mond, 2014; Mond et al., 2010). More generally, greater thought may need to be given to whether, and how, to include different demographic subgroups in eating disorders health promotion and prevention programs (Mond, 2014; Mond et al., 2010).

Finally, it should be noted that the current research was conducted in relatively affluent, urbanised areas of Australia. Since aspects of mental health literacy might be expected to differ as a function of the socio-demographic variables characteristics of different populations, and from one country to another (Jorm, 2012), it would be worthwhile to replicate the current findings in more diverse populations, for example, in countries with a broader range of ethnicities and in non-Western countries.

6.3. Implications and Future Directions

As recognition of disordered eating was found to be poor among individuals with probable bulimic-type eating disorders - in samples of both adolescent and adult women - and given this was associated with low or inappropriate help-seeking, strengthening self-recognition through intervention programs may be one way to reduce the individual and community health burden of these disorders. In the context of a more general discussion, it is instructive to consider the different levels at which interventions designed to improve self-recognition of disordered eating among individuals with bulimic-type eating disorders, and those with eating disorder symptoms more generally, might be implemented.

In theory, programs designed to improve self-recognition of disordered eating could be implemented at a number of different levels, including health promotion, different levels of prevention, early intervention, or a combination of these (Commonwealth Department of Health and Aged Care, 2000; National Research

Council and Institute of Medicine, 2009). This could involve the development of new initiatives or the integration of new ideas and methods into existing programs.

Broadly speaking, health promotion entails efforts to improve the health and wellbeing of individuals in the population (Commonwealth Department of Health and Aged Care, 2000). Prevention aims to target risk factors that predispose a person to a mental health problem and reduce the rate of incidence (National Research Council and Institute of Medicine, 2009). In the widely-cited framework developed by the Institute of Medicine (cf. C. Becker, Plasencia, Kilpela, Briggs, & Stewart, 2014; National Research Council and Institute of Medicine, 2009), three categories of prevention activities are recognised: universal, selective and indicated. Universal prevention refers to initiatives that include all individuals in population, i.e., regardless of their risk or symptom status. Selective prevention refers to activities that target individuals with known risk factors for a given health problem, whereas indicated prevention programs focus on individuals at very high risk and/or those showing early symptoms. Early intervention aims to intervene with those who have clear symptoms of a mental health problem and/or who are experiencing a first episode of a disorder (Commonwealth Department of Health and Aged Care, 2000). Although this terminology might be taken to infer that these different levels are discrete entities, it should be noted that in practice there is significant overlap in moving from one level to the next. In particular, there may be no clear separation between health promotion and universal prevention and between indicated prevention and early intervention (Commonwealth Department of Health and Aged Care, 2000). Thus, this current research highlights that there is a need for a spectrum of intervention, spanning across the population, ultimately only excluding those already in treatment (Levine & Smolak, 2006; Mond, 2014).

Health promotion programs often evolve in the form of public policy, with examples such as the *Voluntary Industry Code Of Conduct on Body Image* (Australian Government, 2009; Paxton, 2012), a Victorian government based initiative that encourages the use of positive body image practices in the fashion, advertising, media

and entertainment industries. In relation to self-recognition, such campaigns could significantly improve the ability of the public to identify disordered eating behaviours in themselves or others. Information designed to improve awareness and understanding of bulimic-type eating disorders could, for example, be incorporated in existing eating disorder health promotion programs, such as *Mind Matters* (Wyn, Cahill, Holdsworth, Rowling, & Carson, 2000), a program designed to promote health and wellbeing among secondary students. To date, health promotion programs for eating disorders have rarely been conducted with attention focused more on selective prevention approaches. For example, there has been no program in the eating disorders field comparable to that of the *Beyondblue* initiative for depression in Australia, which led to destigmatisation, greater awareness and consumer participation (Dunt et al., 2011). A similar health promotion campaign of this kind could have substantial benefits, including improved awareness and understanding of eating-disordered behaviour at the population level and, in turn, improved self-recognition of disordered eating among individuals with early symptoms, improved recognition of disordered eating in others, and improved uptake of early, appropriate treatments when needed. In this sense, health promotion can be seen to be complementary to indicated prevention and early intervention efforts.

Universal prevention efforts for eating disorders typically focus on reducing key risk factors, such as body dissatisfaction, internalisation of the “thin ideal”, and media literacy, in populations selected without regard for their risk status. One such project was a collaboration between The World Association of Girl Guides and Girl Scouts and Dove, who started “*Free Being Me*”, aimed at improving self-esteem and body acceptance. Other avenues for delivering universal prevention efforts generally occur in whole-of-school based programs such as *Media Smart* (Wilksch & Wade, 2009), which aims to improve body dissatisfaction by building participants’ understanding of how images are manipulated in the media. As poor self-recognition has been identified as a potential barrier for help-seeking, among female adolescents at least, programs of this kind could provide a means to improve self-recognition at the population level, at a

key developmental stage in terms of risk for bulimic-type eating disorders. Potential benefits in this regard might be observed among both at-risk individuals (e.g. adolescent girls with high levels of body dissatisfaction, in terms of improved insight into risk status) and those with whom they interact who are not at risk or who are at lower risk (e.g., adolescent girls or boys with low levels of body dissatisfaction, developing improved recognition of risk-status and/or early symptoms in others). Again, it is apparent that there is no clear separation between different levels of the intervention spectrum (Commonwealth Department of Health and Aged Care, 2000). Selective prevention eating disorder programs, like universal programs, aim to reduce the incidence of eating disorders by targeting known risk factors. In contrast to universal prevention programs, however, selective prevention efforts focus on sub-groups of the population at increased risk by virtue of their demographic characteristics and/or risk-profile (Paxton, 2011). Indicated eating disorder prevention efforts focus on individuals who are at very high-risk and/or who may already show signs of symptomatology (Levine & Piran, 2004; The National Eating Disorders Collaboration, 2010). Programs such as *Set Your Body Free* (Paxton, McLean, Gollings, Faulkner, & Wertheim, 2007), aimed at young adult women, target a number of risk factors from body dissatisfaction to health eating. For adolescents, programs such as *Happy Being Me* (Richardson & Paxton, 2010), have shown promising results in terms of reducing key risk factors for the development of disordered eating. Cognitive dissonance programs, which require participants to critique pre-existing unhelpful thoughts around factors such as body image or the thin ideal, have been found to be effective with these populations (Stice et al., 2013). Example of such programs include, *The Body Project* (C. Becker, Bull, Schaumberg, Cauble, & Franco, 2008; Stice & Presnell, 2007), which has been found to be beneficial in reducing key risk factors and behaviours. Other programs, such as *Student Bodies* (Winzelberg et al., 2000), provide promising prevention avenues to address both low risk and high risk adolescent populations, with both groups having favourable outcomes (O'Dea, 2012). These programs target low and high-risk populations, thus spanning across selective and indicated prevention.

Such programs could improve self-recognition by way of filtering individuals towards appropriate treatment options or alternative intervention programs. Improving awareness and understanding of bulimic behaviours and bulimic-type eating disorders among at-risk individuals could similarly lead to improvements in self-recognition and recognition. As indicated in the Discussion section of the second paper of this dissertation, there are concerns regarding iatrogenic effects amongst adolescent populations for this type of approach (O'Dea, 2012). Further, school curriculum time is limited. For these reasons, focusing on general mental health literacy, rather than mental health literacy relating to symptoms of particular mental health problems, may be a more appropriate approach in school-based mental health programs.

Early intervention operates at two levels, namely targeting either those with symptoms, or those who are likely to interact with those who have symptoms. Intervening early in the disease course is necessary to reduce the cost, morbidity and prevalence of the disorder, as well as limiting the possible effects on social, occupation, and educational functioning (McGorry, Purcell, Hickie, & Jorm, 2007). Assisting someone with early symptoms to seek appropriate treatment minimises the risk of that individual developing a chronic disorder, where treatment and intervention efficacy often lessens considerably (Currin & Schmidt, 2005; Hay, 2003; Safer et al., 2001). Despite early intervention efforts for eating disorders having the potential to play a pivotal role in reducing disease burden, they have, like health promotion efforts, received comparatively little attention. The Mental Health First Aid Program (Hart et al., 2012; Jorm, Kitchener, O'Kearney, & Dear, 2004; Kitchener & Jorm, 2008), is a good example of an early intervention program for eating disorders in which information concerning poor self-recognition of disordered eating among individuals with bulimic-type eating disorders might usefully be incorporated. Universities, workplaces or community programs provide helpful platforms for early intervention of this nature to take place. While the focus of the current study was on self-recognition of disordered eating, programs designed to improve recognition of disordered eating in others and programs designed to improve self-recognition among individuals with symptoms can

be seen to be complementary, in that improved self-recognition would be expected to be conducive to improved recognition by others and vice-versa (Mond, 2014).

As suggested above, interventions to reduce the public health burden of eating-disordered behaviour have been largely confined to selective prevention programs and clinical management. Hence, there is a need to expand health promotion and early intervention efforts. The current findings suggest that improving self-recognition - and recognition - of bulimic-type eating disorders would be a worthwhile component of such initiatives.

Ideally, from a public health perspective, different prevention approaches would be integrated with health promotion, early intervention, and evidence-based clinical management, in whole populations, since an approach of this kind would effect the maximal reduction in disease burden (Mond, 2014; Mond et al., 2014). Although efforts to integrate two levels of the spectrum of intervention have occasionally been conducted, for example, efforts to integrate universal and secondary prevention programs (Abascal, Brown, Winzelberg, Dev, & Taylor, 2004) and efforts to integrate prevention and treatment efforts (Wilfley et al., 2013), the author is not aware of any attempts to develop a fully integrated program, namely, a program designed to be implemented across all levels of the intervention spectrum. It is hoped that the current findings will be helpful in informing how improved self-recognition of disordered eating among individuals with bulimic-type eating disorders might be addressed in future initiatives of this kind.

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Appendix

Research Practicum

Background to Research Practicum

Currently, there is little in the way of interventions designed to improve self-recognition, recognition, or any other aspects of eating disorders mental health literacy. One example of such a program was conducted by Hay and colleagues (Hay et al, 2007), who sought to improve eating disorders mental health literacy in a population-based sample of women (n=122) with bulimic-type eating disorders identified at the second phase of a large-scale epidemiological study. Participants were allocated at random to an intervention group or control group. Outcomes, including knowledge of the symptoms of bulimic-type eating disorders, were compared between groups at baseline, 6 months and 12 months. The intervention group was given an information pack on bulimia nervosa and related disorders, including information about the nature of the disorder, effective treatments, how to purchase a psycho-educational self-help book, and how to access local eating disorder services and reputable websites. The control group received a pamphlet only listing information about local mental health services. Participants' ability to recognise the symptoms of an eating disorder increased significantly in both intervention and control groups, as did help-seeking, although change in these outcomes did not differ significantly between groups. The authors suggested that the minimal information contained in the pamphlet received by the control may have been sufficient to achieve these outcomes. Self-recognition per se was not considered in this study, although this would have been possible.

The research conducted by Hay and colleagues (2007) would be classified as an early intervention trial, since participants had high levels of eating disorders symptoms. Although research of this kind, i.e., a large, two-phase, epidemiological study, was not feasible for the current project, it would nevertheless be of interest to seek to improve eating disorders mental health literacy in an asymptomatic sample. Such an intervention would be classified as health promotion, although if improvements in individuals' awareness and understanding of eating-disordered behaviour were to lead to improvements in the ability of those individuals to assist others, namely, those

with early symptoms, to recognise their problematic behaviours and consider seeking treatment, then this would be an example of health promotion efforts overlapping with and laying a foundation for early intervention efforts. Previous research, using the mental health literacy paradigm, has consistently found that young women, including those with eating disorder symptoms, favour family members and/or close friends as their first point of contact when seeking help for concerns relating to problem eating behaviours and other mental health problems (Mond et al., 2009; Mond, Hay, Rodgers, & Owen, 2007; Mond, Marks, et al., 2007). Research of this kind highlights the importance of the social network in early intervention for mental health problems (Hepworth & Paxton, 2007; Jorm & Wright, 2007; Kitchener & Jorm, 2008; Vogel, Wade, Wester, Larson, & Hackler, 2007; Cusack, Deane, Wilson, & Ciarrochi, 2004; Dew, Bromet, Schulberg, Parkinson, & Curtis, 1991). This may be particularly important for individuals with bulimic-type eating disorders, given that these disorders typically have their onset late in adolescence or early in adulthood, when individuals are becoming more independent from primary care givers and more reliant on their social network (Hay, Mond, Buttner, & Darby, 2008; Hudson, Hiripi, Pope, & Kessler, 2007; Preti et al., 2009).

Recently, Hart and colleagues (Hart, Jorm, & Paxton, 2012) considered whether a brief, psycho-educational training program could improve recognition, attitudes, knowledge and helping behaviours relating to disordered eating in a university population. The study was a pilot evaluation of the Mental Health First Aid for Eating Disorders, a component of a broader mental health literacy program (MHFA). MHFA is a two-day workshop, which covers a broad range of mental health issues, (i.e. depression, anxiety, and psychosis). MHFA implements a standard approach to helping others, and has had promising results with regards to improving mental health literacy for other mental health issues (Jorm, Kitchener, Fischer, & Cvetkovski, 2010; Jorm, Kitchener, O'Kearney, & Dear, 2004; Jorm, Kitchener, Sawyer, Scales, & Cvetkovski, 2010).

To explore whether the eating disorders component of MHFA was effective, Hart and colleagues conducted an uncontrolled, repeated measures trial in a sample of 73 university students. The intervention was a single session four-hour workshop, with participants completing self-report measures pre and post the intervention, and at a six-month follow-up. At the six-month follow-up, the results suggested an increase in accuracy of recognition of eating disorders, knowledge of effective treatments and confidence in providing help. In particular, this program was successful at improving recognition of bulimia nervosa, with the change sustained at follow-up. Despite the study finding improvements in recognition, knowledge of first aid strategies, and no increase in the desire for social distance, contact did not significantly improve from baseline to follow up, and neither did the helping behaviours of the participants. The researchers suggested that improvements in the dosage or duration of the material might lead to improved outcomes in terms of helping behaviours.

Subsequently, Hart and colleagues developed an early intervention program known as "Should I Say Something?". The program differed from the MHFA approach by creating a standalone workshop that provides participants with skills necessary to assist someone with a suspected eating disorder to seek professional help. "Should I Say Something?" also incorporated a large troubleshooting component of the workshop to ensure participants learnt appropriate skills to manage common difficulties associated with helping someone with a suspected eating disorder problem.

The third study presented in this dissertation sought to provide preliminary evidence for the effectiveness of "Should I Say Something?", which was designed to improve eating disorders mental health literacy in young people. The intervention targeted the main areas of mental health literacy, with the aim to improve general knowledge, recognition, knowledge of treatment options, and skills in providing support for treatment seeking. Based on the findings reported by Hart and colleagues (Hart et al, 2012), it was reasonable to hypothesise that in a sample of undergraduate university students who participated in the workshop, attitudes, knowledge and recognition, as well as helping behaviours, would improve over time.

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The findings of the research practicum were presented at the Australia and New Zealand Academy for Eating Disorders (ANZAED) conference in 2013, "Inspiring Change: Person and Context". The abstract of this presentation was published in the "Journal of Eating Disorders".

Gratwick-Sarll, K., Bentley, C., & Mond, J.M. (2013). Improving eating disorders "mental health literacy" in young people: a preliminary evaluation. *Journal of Eating Disorders*, 1(Suppl 1). doi:10.1186/2050-2974-1-S1-O37.

Abstract

A repeated measures uncontrolled preliminary evaluation of a single three-hour workshop, "Should I Say Something?", aimed at improving eating disorders mental health literacy, was conducted in a sample of 177 university undergraduates. Following participation in the workshop, significant increases in eating disorder recognition and knowledge, and significant decreases in stigmatizing attitudes, were reported by participants. Moreover, 85% of participants reported that they provided assistance to someone whom they suspected had a mental health condition, including an eating disorder, during the three-month follow-up period. This study provides preliminary evidence that "Should I Say Something?" may be effective in improving the mental health literacy of young people.

While effective treatments currently exist for individuals with bulimic-type eating disorders, namely bulimia nervosa, binge eating disorder and variants of these disorders, many individuals do not seek treatment or experience a long delay in treatment seeking, with an estimated average of six years between onset of the disorder and subsequent intervention (Fairburn et al., 1995; Hart, Granillo, Jorm, & Paxton, 2011; Hay, Bacaltchuk, & Stefano, 2004; Sullivan, 1995). It has been hypothesised that one of the reasons as to why individuals delay or do not engage in treatment seeking is due to poor mental health literacy (Gratwick-Sarll, Mond, & Hay, 2013; Mond, Hay, Rodgers, & Owen, 2008). 'Mental health literacy' is a term coined by Jorm and colleagues (1997, p. 182), to describe "the knowledge and beliefs that individuals hold, which lead to improved recognition, management and prevention of their own or another's mental disorder." Kelly, Jorm, and Wright (2007) suggest that the implementation of early intervention programs targeted at improving mental health literacy could enhance appropriate treatment seeking through better recognition and allow individuals to seek treatment earlier. Early treatment seeking in the disease course of bulimic-type eating disorders is associated with reduced development of chronic bulimic-type behaviours, as well as reduced rates of relapse and ongoing health problems (Fairburn, 2008).

The ability to recognise bulimic-type eating disorders has been identified as a significant factor for improving early intervention and treatment seeking (Mond et al., 2008; Wright, Jorm, Harris, & McGorry, 2007). Currently, public awareness, as well as self-recognition of disordered eating, has been found to be quite poor amongst individuals experiencing bulimic-type eating disorders (Gratwick-Sarll et al., 2013; Mond, Rodgers, Hay, & Owen, 2006). However, the social network (i.e., friends and family members) of individuals experiencing eating disorders has been found to be instrumental in improving identification and treatment seeking behaviours (Cusack et al., 2004; Dew et al., 1991). The social network has been found to not only reduce stigma and barriers for treatment seeking, but to increase individuals' treatment seeking behaviour and motivation for recovery (Hepworth & Paxton, 2007; Jorm &

Wright, 2007; Kitchener & Jorm, 2008; Vogel et al., 2007). Hart, Jorm and Paxton (2012) suggest that utilising the social network is an effective mechanism to bring about improved treatment seeking and change, rather than attempting to improve the mental health literacy of the individual sufferer alone. Despite these promising findings, Kitchener and Jorm (2008) have also identified a current lack of public awareness and understanding which can aid early intervention. This is especially the case amongst a young population, who often require the help of their parents or other adults to seek appropriate treatment, with recognition of a young person's illness improving as a function of parental ability and age (Wright & Jorm, 2009; Wright et al., 2007).

Enabling the social network to encourage treatment-seeking for those with bulimic-type eating disorders is particularly relevant for those with emerging pathology, as onset is largely in early adulthood, where individuals are becoming more independent from primary care givers and more reliant on their wider social network (Hay et al., 2008; Hudson et al., 2007; Preti et al., 2009). This is especially the case for undergraduate university students, who have higher rates of eating disorders than their same-aged peers in the general population (Luce, Crowther, & Pole, 2008). Not only does the prevalence and onset peak between 18-22 years of age, the risk factors for these disorders, such as body dissatisfaction, is significantly higher among university women than among women of similar age in the general population (Luce et al., 2008; Mond & Arrighi, 2011). Thus, if knowledge of bulimic-type eating disorders is poor within such populations, individuals who develop symptoms of these disorders may be less likely to recognise that they have an eating problem or have the ability to recognise it in others and, in turn, less likely to seek or assist someone else to seek treatment for those symptoms (Mond, Hay, et al., 2007; Mond, Myers, Crosby, Hay, & Mitchell, 2010).

Efforts to improve eating disorder mental health literacy were explored by Hart and colleagues (2012), which, to our knowledge, is the only early intervention program specifically designed to improve the eating disorders mental health literacy of young people. This study was conducted in a university population, with the aim of a pilot

evaluation to determine whether a training intervention on mental health first aid for eating disorders improved knowledge, attitudes and behaviours towards people with eating disorders. The study implemented Mental Health First Aid for Eating Disorders, a component of a broader mental health literacy program that spans over two days of training, which has had promising results with regards to improving mental health literacy for other mental health issues, and uses a standard approach to helping others (Jorm, Kitchener, Fischer, et al., 2010; Jorm et al., 2004; Jorm, Kitchener, Sawyer, et al., 2010). The results suggested an increase in accuracy of recognition of eating disorders, knowledge of effective treatments and confidence in providing help, however some of the results were not significantly sustained over a six-month period.

Subsequently, Hart et al. (2012) developed a new early intervention program named “Should I Say Something?” To our knowledge, this program has not been evaluated, and differs from the previously described program by using an amended approach to encourage the provision of help to those who have suspected eating disorders. It is designed specifically to improve recognition, knowledge, attitudes and helping behaviours for those with suspected eating disorders, and focuses on assisting participants with troubleshooting potential problems that commonly arise when attempting to help someone with a suspected eating disorder. The program is also believed to be the only standalone eating disorders mental health literacy program. Therefore, the current study aimed to explore whether this new early intervention program – “Should I Say Something?” (Hart et al., 2012; Hart, Jorm, Paxton, Kelly, & Kitchener, 2009), a single three-hour workshop focused on improving mental health literacy and treatment-seeking behaviours for a social network – improved knowledge, attitudes and helping behaviours. It was hypothesised that in a sample of undergraduate university students who participated in the workshop, attitudes, knowledge and recognition, as well as helping behaviours, would improve over time.

Method

The Intervention

The psychoeducational early intervention program “Should I Say Something?”

was developed in 2012, with the foundations of the workshop based on research stemming from a Delphi study (Hart et al., 2012; Hart et al., 2009). The Delphi consensus method is a qualitative and quantitative approach that gathers information from the existing literature, which is then endorsed by expert opinion, ultimately allowing for the selection of effective strategies for eating disorder first aid (Hart et al., 2009). Expert consensus was developed with 36 clinicians working in the field eating disorders, as well as 27 care-givers and 22 mental health consumers who had become involved in areas such as authoring books, blogs or websites, mentoring, support or advocacy groups, education, training, treatment, research or policy development (Hart et al., 2009). The outcome of the Delphi study was a document providing information to the public on how to assist someone developing or experiencing an eating disorder, titled *Eating Disorders: First Aid Guidelines* (Hart et al., 2009; Mental Health First Aid Training and Research Program: Eating Disorders: First aid guidelines. Melbourne: Orygen Youth Health Research Centre; 2008). The “Should I Say Something?” workshop aims to teach attendees how to implement these guidelines. In addition to this, the development of the workshop was informed by the theories of adult learning, including Andragogy (Knowles, 1984) and Self-Directed Learning (Mezirow, 1985).

The three-hour single session workshop was presented in laboratory classes, with approximately 20 students per class. The presentation was delivered by a primary facilitator, with the addition of two co-facilitators, all of whom were registered psychologists. The workshop was manualised to ensure consistency across groups and implemented a didactic approach, using a PowerPoint presentation, large group discussion and small group activities. The structure and topics of the workshop are outline in Table 1.

Table 1. *Outline of workshop*

Part One: All About Eating Disorders	Part Two: How to Help
✓ Background	1. Approach the person
✓ Definitions	2. Discuss your concerns
✓ Types of Eating Disorders	3. Suggest professional help and other supports
✓ Risk Factors	4. Follow-up with the person
✓ Treatment	
✓ Warning Signs	

Participants

One hundred and seventy-seven undergraduate Australian National University third year psychology students were invited to take part in the workshop through a laboratory class, with voluntary participation for the research component. The sample was chosen due to the greater likelihood of the participants encountering an individual with an eating disorder, as risk factors and eating disorder pathology has been found to be significantly higher in undergraduate university students than the general population (Luce et al., 2008). As participants were psychology students, it was noted that ceiling effects might occur due to the sample being potentially more informed than a lay population. The study was approved by the Australian National University Human Research Ethics Committee (protocol no. 2012/523).

Measures

The measures were implemented three times, at baseline (time 1), immediately post-intervention (time 2) and at three-month follow-up (time 3), with the exception of the First Aid Experiences Questionnaire, which was only administered at time 3. The self-report questionnaire was designed to measure demographic information, participant knowledge, attitudes and helping behaviours for eating disorders.

Demographics

Demographic information was collected at time 1, including age, first language (English/not English), place of birth (Australia/not Australia), place of residence (on campus/off campus), and whether participants had previously completed an

intervention concerning eating disorders or mental health first aid. Additional information was collected on participants' experience with eating disorders – including previous or current personal experiences, knowing someone with an eating disorder or studying the topic at university.

Knowledge and Recognition

The First Aid Knowledge Test (FAKT) (Hart et al., 2009) assesses participants' knowledge of best practice first aid strategies, as outlined in Eating Disorders: First Aid Guidelines. The scale was shortened for the present study and contained 25 statements concerning the knowledge and behaviours needed to provide adequate first aid for bulimic-type eating disorders, with 'Agree', 'Disagree' or 'Not sure' response options. Scores for the FAKT range from 0-25, with a point given for every answer that corresponds with the information outlined in the guidelines.

The Mental Health Literacy Questionnaire for Bulimic Type Eating Disorders (MHLQ-B) (Mond et al., 2004c) assesses participants' knowledge of eating disorder literacy. The MHL-B measures problem recognition, attitudes towards bulimia and knowledge of effective treatments. Knowledge of effective treatments was explored through the MHLQ-B, with the inclusion of five evidence based treatments based on the National Institute for Health and Care Excellence guidelines (NICE, 2004) (e.g. Cognitive Behavioural Therapy or seeing a psychiatrist) and five treatments that were not evidence based (e.g. getting a new hobby or relaxation therapy). Participants were given a single score based on correct identification of evidence-based treatments for bulimia nervosa, with a point given for each time "helpful" was selected.

A central component of improved mental health literacy is better recognition of eating disorder symptomatology. Recognition of bulimic-type eating disorders was assessed through the presentation of a vignette, featuring a fictional character "Kelly" with eating disorder symptomatology consistent with DSM-IV-TR (APA, 2000) diagnostic criteria for the non-purging subtype of bulimia nervosa. Participants were asked to indicate from nine options what "Kelly" might be experiencing.

Attitudes

In addition to the MHLQ-B, attitudes were assessed through use of the Social Distance Scale (Link, Cullen, Frank, & Wozniak, 1987), a commonly used stigma scale that assesses levels of social rejection of those suffering from a mental illness. Seven items evaluating participant willingness to have social contact were scored on a five-point Likert scale from “definitely willing” (“1”) to “definitely unwilling” (“5”). Higher scores on the scale suggest greater desire for social distance and thus more negative attitudes towards those with an eating disorder. The Cronbach’s alpha for the current study was 0.92.

Behaviours

The following behavioural measures were completed at time 3 only, in order to assess behaviours during the three-month follow-up period.

Intention to offer help and assist with treatment-seeking for symptomatic individuals was assessed by asking participants “has completing this workshop changed how likely you would be to do the following steps, for someone close to you that you thought might have an eating problem?” The steps were based on the four-step approach that the workshop prescribes when assisting someone, namely i) approach the person, ii) discuss your concerns, iii) suggest professional help, and iv) follow-up with the person. Participants responded on a five-item scale, ranging from “much less likely” (“1”) to “much more likely” (“5”). Similarly, participants were asked to rate their levels of confidence in helping an individual with an eating disorder following the workshop and whether they thought their assistance was successful (Kitchener & Jorm, 2002).

An adapted version of the First Aid Experiences Questionnaire (Jorm, Kitchener, & Mugford, 2005), which asked participants to indicate the level of help offered to an individual that they believed required assistance, assessed helping behaviours. For example, the questionnaire asks “If you offered help, what kind of help did you offer?” Participants responded using a forced-choice list of options developed from the most commonly reported in previous research (Hart et al., 2012). These

included options such as “talked to the person and offered general support”, “encouraged/assisted with seeking professional help” and “asked someone more appropriate to help the person”.

Design and Statistical Analysis

The study implemented an uncontrolled repeated measures design to evaluate the effectiveness of the workshop by comparing participants' outcome measure scores at time 1, 2 and 3. In line with the guidelines proposed by Campbell and colleagues (2000) on evaluations of clinical interventions, an uncontrolled trial was employed to assess the feasibility of the intervention, prior to the commencement of a randomised control trial. To explore the relationships between variables, paired samples two-tailed t-tests were employed for the analysis of continuous measures implemented at two time points, whereas repeated measures analyses of variance (ANOVAs) were used for categorical data collected at three time points. McNemar's test was used to explore paired comparisons and Cochran's Q was implemented to explore relationships between dichotomous variables. Participants' reported behaviours and use of the skills are reported as percentages in text.

Results

Sample Characteristics

One hundred and seventy-seven participants completed the questionnaires at time 1 and time 2, with an attrition rate of 8.4% at time 3 ($n = 162$). Of the participants, 141 were female and 35 were male, with one selecting “other” as their gender. The age range of participants was 18 to 46 years ($M = 20.3$ years; $SD = 3.37$), with 62.1% born in Australian and 76.8% reporting English as a first language. When establishing previous experience of mental health first aid, 10.2% of participants had read guidelines or completed training, with a majority of those reporting previous training. One individual indicated that they were currently experiencing an eating disorder, 15 reported a past eating disorder and two individuals reported currently receiving or having previously received treatment for an eating disorder. Participants reported that they knew or had known someone with an eating disorder (41%), or had studied the

topic (32%), with 19.3% of individuals reporting contact in the past six months with someone with an eating disorder. Of those who indicated that they had contact with someone who had a suspected eating disorder, 3.2% had offered no help, 12.9% had offered some help and 3.2% had offered a lot of help.

Knowledge

The results indicated that there was a significant difference between FAKT scores at over time $\chi^2(2) = 339.71, p < .001$). Mauchly's test indicated that the assumption of sphericity had been violated, so the Huynh-Feldt estimate of sphericity was used $F(1.80, 290.56) = 449.94, p < .001, \eta^2 = .73$. While knowledge of first aid strategies did not continue to improve from time 2 to time 3, there was a significant improvement from time 1 to time 3 ($p < .001$). A Friedman's ANOVA indicated a significant difference across times 1, 2 and 3 $\chi^2(2) = 64.87, p < .001$, and a Wilcoxon signed rank test suggested a significant difference between time 1 and time 3, $T = -2.02, p < .05$.

Recognition

Participants improved on their ability to recognise bulimia nervosa over time $\chi^2(2, 163) = 32.96, p < .001$. McNemar tests showed a significant improvement in recognition when comparing time 1 (18.6%) to time 3 (37.8%), indicating a sustained change ($p < .001$). More generally, participants significantly improved on their ability to recognise bulimic-type eating disorders, including both bulimia nervosa and binge eating disorder, over time $\chi^2(2, 164) = 31.57, p < .001$. McNemar tests indicated that there was a significant improvement in recognition of bulimic-type eating disorders, which was maintained from time 1 to time 3 ($p < .001$). At time 3, 80.9% of participants had indicated that they believed Kelly was experiencing a bulimic-type eating disorder. Also of note, participants were significantly less likely to select a non-eating disorder problem option over time ($\chi^2(2, 163) = 36.81, p < .01$), with a decrease from time 1 (41.8%) to time 3 (16.3%). Of those who did select a non-eating disorder problem, a majority of participants reported that the main problem was low self-esteem, a central

component of eating disorder pathology.

Attitudes

The results indicated that there was a decline in willingness for social distance over time ($\chi^2(2) = 4.96, p < .01$). Mauchly's test indicated that the assumption of sphericity had been violated, so the Huynh-Feldt estimate of sphericity was used $F(1.85, 287.45) = 5.13, p < .01, \eta^2 = .03$. There was a significant difference between scores from time 1 to time 2 ($t(172) = 2.85, p < .01$), and between time 1 and time 3 ($t(157) = 2.75, p < .01$). The MHLQ-B showed generally positive attitudes towards "Kelly" who was presented in the vignette, with participants largely disagreeing with more stigmatizing attitudes. Friedman's ANOVAs demonstrated increased participant recognition that Kelly's problem is serious ($\chi^2(2) = 82.03, p < .001$), and that it would be distressing ($\chi^2(2) = 48.09, p < .001$), with means suggesting that most participants agreed or strongly agreed with these items. Across the three time points, participants did not strongly endorse items such as, "Kelly should stop worrying about how she looks and get on with her life" ($M = 2.77; 2.18; 2.44, \chi^2(2) = 48.09, p < .001$), nor "Kelly only has herself to blame" ($M = 1.83; 1.50; 1.70, \chi^2(2) = 28.43, p < .001$).

Behaviours

Following the workshop (time 2), the majority of participants reported that they would be more likely or much more likely to approach a person (91.9%), to discuss their concerns with the person (91.4%), to suggest professional and other help (93.7%), and to follow-up with the person (93.1%). Not only did participants indicate a willingness to help someone following the workshop, levels of confidence in assisting someone with a bulimic-type eating disorder significantly improved from time 1 to time 2 ($\chi^2(2) = 121.1, p < .001$), and time 1 to time 3 ($T = -5.538, p < .001$). At time 3, 42.0% of participants reported that they had encountered someone with a mental health problem or an eating disorder during the three-month follow-up period, with 8.4% reporting that they suspected someone had an eating disorder. Of those who reported contact, 85.5% reported that they were able to provide assistance. In comparison to time 1, where only

16.1% reported assisting someone that they suspected had a mental health problem, self-reported helping behaviours grew substantially at time 3. Generally, participants assisted one or two individuals, with 5% of people reporting that they assisted five or more. Of the individuals who indicated that they had assisted someone, 80% reported having used the skills that they had learned from the “Should I Say Something?” workshop.

Types of help offered included general support (24.4%), information on professionals (17.4%), general information (12.8%), information on self-help (4.7%) or the helper asked someone more appropriate to help the individual (4.7%). Participants reported that, where professional help was recommended, an estimated 46.0% of individuals went on to seek professional help, with 78.0% overall confirming that they were able to either recommend professional help or confirm that the individual was already receiving it. When participants were asked to reflect on whether they believed that their intervention had been successful, 45.8% reported that they believed it was successful, 40.7% said they were unsure and 13.6% said it was unsuccessful. Participants attributed some success to the workshop in terms of assisting someone, with 6.8% indicated that the workshop contributed “very much”, 47.5% “a little bit”, 35.6% were not sure, and 10.2% said that it did not contribute. Commonly cited reasons for not providing assistance included not knowing the person well enough (2.9%), believing that providing assistance would be inappropriate (5.8%) and forgetting the skills and information learned in the workshop (3.5%).

Discussion

The current study aimed to explore whether the early intervention program “Should I Say Something?” (Hart et al., 2012; Hart et al., 2009), improved eating disorders mental health literacy and helping behaviours in the social network of individuals with eating disorders, using a sample of university undergraduate students. Overall, the findings were promising, suggesting that the workshop led to improved eating disorders mental health literacy amongst participants. There were significant improvements from time 1 to time 2 on measures of knowledge, recognition and attitudes, and these were

maintained at time 3. While individuals did not continue to improve from time 2 to time 3 on a majority of the measures, participants did not regress to previous baseline (time 1) levels. In addition to this, participants reported assisting individuals whom they suspected might be experiencing an eating disorder or a mental health issue, with participants also reporting an increase in confidence in providing assistance when appropriate.

Improvements in knowledge, specifically of effective treatments and mental health first aid strategies for bulimic-type eating disorders, were observed and sustained from time 1 to time 3. In particular, information presented in the workshop appeared to increase participants' ability to identify appropriate first aid strategies for bulimic-type eating disorders, such as when medical intervention is required and knowledge of evidence-based treatments. This finding is of consequence, as individuals were encouraged to suggest professional help should they encounter someone whom they believed might be experiencing an eating disorder, and thus were required to be knowledgeable about current evidence-based treatment options.

Following the workshop, participants significantly improved in their ability to recognise both bulimic-type eating disorders and bulimia nervosa specifically, with participants being significantly less likely to select a non-eating disorder problem option. Given that recognition plays a central role in the facilitation of providing assistance, and that symptomatic individuals, as well as the general community, have often been found to be poor at recognizing bulimic-type eating disorders (Gratwick-Sarll et al., 2013; Kitchener & Jorm, 2008; Mond et al., 2006), these findings may have important considerations for public health policy. In particular, the current findings suggest that health promotion campaigns aimed at improving community recognition of the bulimic-type eating disorders may be beneficial (Kelly et al., 2007).

The results showed a decline in stigmatising attitudes towards individuals with a bulimic-type eating disorder, as participants' desire for social distance significantly decreased from time 1 to time 3. Likewise, blaming and minimization of the problem saw a decline, with participants demonstrating resistance to these attitudes at time 1, and

continued to disagree with such statements at time 3. Furthermore, as frequently found in the literature, participants believed that it would be distressing to have Kelly's problem (Hart et al., 2012; Mond & Marks, 2007). The significant reduction in stigmatising attitudes was a novel outcome, as this effect has not been commonly found in previous research (Hart et al., 2012; Jorm & Oh, 2009). The sample utilised in this study showed already empathetic responses prior to participating in "Should I Say Something?", thus it could be hypothesised that a less empathic sample may demonstrate even greater attitude change.

Changes in behavioural intentions and confidence in helping were demonstrated by participants, with a significant improvement in confidence scores from time 1 to time 3. The First Aid Experiences Questionnaire suggested only a small percentage of participants encountered someone who potentially had an eating disorder, however a large portion of participants reported contact with someone who had a mental health issue. Participants demonstrated that the training could be generalised to other mental health concerns, as they reported using the approach taught in the workshop to assist individuals with mental health problems other than eating disorders. While a large majority of the participants who reported helping someone said that they used the approach from the workshop, only a small percentage of those attributed the success of helping someone to the workshop. Perhaps this suggests that participants felt they had been the primary contributors to the success they experienced after assisting someone to seek treatment. Interestingly, participants showed sensitivity and awareness around using the four-step approach suggested in the workshop, with participants reporting that they did not use the skills when they thought it would be inappropriate or if they did not know the person well. Given that the workshop emphasized preserving relationships and ensuring skills are used in appropriate contexts, this outcome may suggest that participants were attuned to and adopted the more subtle messages presented.

Limitations

The primary limitation of the current research was the lack of a comparison control group, which precludes definite conclusions about improvements in recognition,

knowledge, attitudes and behaviours. Additionally, the self-report nature of the questionnaires meant that behaviour change could not be directly observed, nor was it possible to observe whether the workshop led to sustained changes given the three-month follow-up period. The follow-up period of three months also only allowed a brief time for participants to potentially encounter and provide assistance to individuals whom they suspected might be experiencing an eating disorder or other mental health concern, thus future research would benefit from a six or twelve month follow-up period. It is also important to note that while the sample was not representative of the general population, it was appropriate for studying eating disorders mental health literacy, given that undergraduate university students have been found to have higher rates of eating disorders than their same-aged peers in the general population (Luce et al., 2008). Additionally, anticipated ceiling effects for improvement in mental health literacy in psychology students were not observed and the sample size was not affected by a large attrition rate, with only an 8.4% drop out.

Study Implications and Future Directions

Results suggest that the "Should I Say Something?" workshop may be beneficial in improving the eating disorders mental health literacy of young people. The workshop may be usefully incorporated into broader eating disorders health promotion programs. To date, health promotion programs for eating disorders have focused almost exclusively on preventing the occurrence of new cases of eating disorders in at-risk populations. However, improving eating disorders mental health literacy at the population level may be an equally important component of reducing the individual and community health burden of eating disorders and eating-disordered behaviour. It is noteworthy that these different approaches are not mutually exclusive (Mond, 2014). The primary implication of the current research is that individuals are willing to assist others in the community with seeking treatment for an eating disorder, or a mental health concern, when provided with appropriate resources. Further research, in the form of a controlled trial, may provide additional support for the effectiveness of the "Should I Say Something?" workshop in leading to sustained improvement in eating disorders

mental health literacy and, perhaps, improved help seeking and quality of life among individuals experiencing or developing an eating disorder.

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