

Eating Disorders “Mental Health Literacy” in Low Risk, High Risk and Symptomatic Women: Implications for Health Promotion Programs

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Attitudes and beliefs concerning the nature and treatment of bulimia nervosa (BN) were compared among young adult women at low risk of an eating disorder (n = 332), at high risk (n = 83), or already showing symptoms (n = 94). Participants completed a self-report questionnaire that included a measure of eating disorder symptoms. A vignette of a fictional person suffering from BN was presented, followed by a series of questions addressing the nature and treatment of the problem described. High-risk and symptomatic participants were more likely than low-risk participants to report that they would not approach anyone for advice or help, were they to have BN or a similar problem, because they would not want anyone to know. Symptomatic participants were more likely to believe that someone with BN would be discriminated against, more likely to consider bulimic behaviors to be acceptable, and more likely to view BN as being common among women in the community, than low-risk participants, participants in the high-risk group being intermediate on each of these questions. The findings suggest that the attitudes and beliefs of individuals with eating disorder symptoms differ systematically from those of individuals at high risk, but who do not yet have symptoms, and from those at low risk. They also indicate specific attitudes and beliefs that may need to be addressed in prevention and early intervention programs. The potential benefits of assessing individuals' attitudes and beliefs concerning the nature and treatment of eating-disordered behaviour and tailoring program content accordingly may be worthy of investigation.

A fundamental premise of psycho-educational approaches to mental health promotion, and health promotion more generally, is that the likelihood of success of any given intervention will be increased if the program content is tailored to the knowledge and beliefs of the individuals receiving the intervention (Kreuter, Strecher, & Glassman, 1999). In developing program content for individuals with symptoms, for example, it would make sense to address knowledge and beliefs likely to impede early and appropriate treatment-seeking, such as poor recognition of symptoms, poor knowledge of evidence-based treatment and perceived stigma associated with disclosure of problem behaviors (Hay, Mond, Darby, Rodgers & Owen, 2007). For individuals at little or no risk, by contrast, it may be more helpful to improve knowledge of how best to intervene with others who may have symptoms or be at risk (Hart, Jorm, Paxton, Kelly & Kitchener, 2009).

A useful framework for organizing knowledge and beliefs relating to mental health problems is that of "mental health literacy," namely, "knowledge and beliefs about mental disorders that may aid in their recognition,

management and treatment” (Jorm et al., 1997a). Jorm and colleagues, and others, have argued that poor mental health literacy is a major factor in the individual, social and economic burden of mental health problems (Andrews, Sanderson, Slade, & Issakidis, 2000; Jorm, Angermeyer & Katschnig, 2000). Poor mental health literacy includes not only poor awareness and understanding of the nature and treatment of mental health problems, but also attitudes and beliefs likely to be conducive to stigmatisation of and discrimination against sufferers (Crisp, Gelder, Rix, Meltzer, & Rowlands, 2000; Mond, Robertson-Smith, & Vitere, 2006).

Research conducted by the authors, relating to eating disorders mental health literacy, suggests that the attitudes and beliefs of individuals with eating disorder symptoms do indeed differ from those of healthy women on a range of issues concerning the nature and treatment of bulimia nervosa (BN) (Mond, Hay, Rodgers, Owen & Beumont, 2004a, b, c). Thus, we found that women with eating disorder symptoms were more likely to consider bulimic behaviors to be acceptable, more likely to over-estimate the prevalence of BN among women in the general population, less likely to believe that a psychiatrist would be helpful in the treatment of BN, more likely to consider childhood sexual abuse as a cause of BN, and more likely to consider low self-esteem to be the primary cause of BN, than women who did not have symptoms.

However, methodological limitations of this earlier research precluded any firm conclusions. For one thing, comparison of subgroups with different risk/symptom profiles was not an a priori aim of the research. Moreover, only two subgroups, namely, those with symptoms and those with no symptoms, were considered and the number of participants with symptoms was too small to permit confidence in the between-group differences observed. The findings did suggest, however, that a more systematic analysis would be of interest. If it could be shown that the attitudes and beliefs of individuals with different risk/symptom profiles differ in characteristic ways, then this information might be used to inform the design of health promotion programs by indicating the specific attitudes and beliefs that might be addressed in different sub-groups of individuals.

With these considerations in mind, the goal of the present study was to compare attitudes and beliefs concerning the nature and treatment of BN between young adult women: (a) at low risk of eating disorder symptoms; (b) at high risk; and (c) already showing symptoms. BN was chosen—that is, in preference to anorexia nervosa—because BN and variants of BN not meeting formal diagnostic criteria are common, disabling and associated with very low uptake of mental health care (Mond et al., 2006; Mond, Hay, Rodgers, & Owen, 2007a). Young adult women were chosen because early adulthood is the peak age of onset for bulimic behaviors and because these behaviors are more common in women than in men (Hay, Mond, Darby, & Buttner, 2008; Mond & Hay, 2007; Striegel-Moore et al., 2009).

The survey was designed to address attitudes and beliefs on a range of topics considered to have implications for prevention and early intervention programs, including: problem recognition; beliefs about the helpfulness of various treatments and treatment providers; beliefs about prognosis; beliefs about etiological factors; beliefs about the likelihood of individuals with symptoms experiencing discrimination; and perceptions of prevalence and severity. We hypothesized that the attitudes and beliefs of participants in the different risk/symptom subgroups would differ from each other in responses to at least some of the questions addressing these topics.

METHOD

Study Design and Participants

The data were collected as the baseline assessment of a longitudinal study of outcome among women with eating disorder symptoms. Participants were (primarily) young adult women from four tertiary education campuses in two states of Australia (Queensland and Victoria). 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 mental health literacy survey, measures of eating disorder psychopathology and quality of life (cf. Mond, Rodgers et al., 2004).

The total sample comprised 756 women with a mean (SD) age of 27.2 (10.7) years (median = 22.0, IQR = 13). 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 regions sampled, 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 a normative sample suggested that levels of eating disorder psychopathology in the present study sample were somewhat higher than those observed in general population samples, as would be expected in a student sample (Luce, Crowther, & Pole, 2008). Participants' quality of life was comparable to that of a general population sample of young adult women (Mond, Rodgers et al., 2004).

Study Measures

MENTAL HEALTH LITERACY SURVEY

The mental health literacy survey was modelled on the work of Jorm and colleagues (Jorm et al., 1997a) with appropriate modifications for the study of an eating problem and for administration in a self-report format (Mond et al., 2004 a,b,c). A vignette describing a (fictional) 19-year-old female (“Naomi”) suffering from BN was first presented (see Appendix A). Care was taken to ensure that the core features of the disorder were present while avoiding the use of medical terminology.

Following presentation of the vignette, participants were first asked: “What would you say is Naomi’s *main* problem?” They were required to choose one answer only from a list of options provided. Options, listed in a pre-determined, random order, were: “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.”

Participants were required to indicate which of a number of possible interventions within each of three categories—people (15 options), treatments/activities (12 options), and medicines/pills (4 options)—they believed would be most helpful for Naomi (see Table 3 for the complete list of options), as well as the person that they would first approach for advice or help were they to have a problem such as the one described. Participants were also asked about Naomi’s likely prognosis were she to receive the treatment considered most appropriate, with (6) response options ranging from “full recovery with no further problems” to “get worse.”

Perceived severity was assessed with the question: “How distressing do you think it would be to have Naomi’s problem?”, whereas perceived acceptability was assessed with the question: “Have you ever thought that it might not be too bad to be like Naomi, given that she has been able to lose a lot of weight?” Five-point Likert-type scales were employed for these questions. In addition, participants were asked whether or not they believed Naomi would be likely to experience discrimination, were others to become aware of her problem.

Perceived prevalence was assessed with the question: “How many women in the community do you think might have Naomi’s problem at any given point in time?” response options ranging from “few women, less than 10%” to “most women, 90% or more”. Beliefs about etiological factors were addressed by asking participants to indicate which of a number of factors was most likely to be a cause of Naomi’s problem developing in anyone. The options ($n = 18$) included a broad range of dispositional (e.g., “having a nervous disposition,” “being a perfectionist”, “having low self-esteem”) and environmental (e.g., “childhood trauma,” “being overweight as a child or

adolescent,” “portrayal of the ‘ideal’ body shape in the media”) factors (cf. Mond et al., 2004c).

The survey ended with a question addressing participants’ personal experience of an eating disorder or problem, namely: “Do you think you might currently have a problem such as the one described?” “Do you think you have ever had a problem such as the one described?” and “Has anyone in your family or circle of friends ever had a problem such as the one described?”

EATING DISORDER EXAMINATION QUESTIONNAIRE (EDE-Q)

The EDE-Q (Fairburn & Beglin, 1994) is a 36-item, self-report version of the Eating Disorder Examination interview (Fairburn & Cooper, 1993). The EDE-Q focuses on the past 28 days and is scored using a 7-point, forced-choice, rating scheme. 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 ED psychopathology (Mond, Hay, Rodgers, & Owen, 2006a). A high level of agreement between EDE-Q and EDE subscale and global scores has been demonstrated in various study populations (cf. Fairburn & Beglin, 1994; Mond, Hay, Rodgers, Owen, & Beumont, 2004d). 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 behaviors. Agreement between self-report and interview assessment of eating disorder behaviors has been found to be lower and more variable than that of the items assessing attitudinal features (Fairburn & Beglin, 1994; Mond et al., 2004d). Interview assessment of binge eating is generally considered to be superior to self-report assessment, whereas the superiority of interview assessment of self-induced vomiting and laxative misuse is less clear (Mond, Hay, Rodgers, & Owen, 2007b).

MEDICAL OUTCOMES STUDY (12-ITEM) SHORT FORM (SF-12)

Quality of life was assessed with the Medical Outcomes Study Short-Form (12-item) disability scale (SF-12; Ware, Kosinski, & Keller, 1996), a 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 (in the US population), 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.

Derivation of Study Subgroups

In the absence of any agreed-upon operational definitions of risk status or eating disorder "case," we relied on our experience with general population surveys of women to inform the derivation of study subgroups (Mond et al., 2004d; 2006a; Mond, Hay, Rodgers, & Owen, 2007c). Specifically, participants were classified into one of three mutually exclusive categories based on their scores on the two EDE-Q items that assess the "undue influence of weight or shape on self-evaluation" and the items assessing eating disorder behaviors. The undue influence of weight or shape on self-evaluation is a potent risk factor for the development and maintenance of eating disorder psychopathology, while also being a diagnostic feature of anorexia nervosa and BN (APA, 1994; Stice, 2002).

Participants were deemed to be low risk if they had scores of 2 or less on both the Importance of Weight and Importance of Shape items (indicating that weight or shape had little or no influence on self-evaluation) and did not (currently) have any regular eating disorder behaviors. Participants were classified as high risk if they had scores of 5 or 6 on either or both Importance of Weight and Importance of Shape items (indicating a marked influence of weight or shape on self-evaluation), but did not have any regular eating disorder behaviors. Participants who had scores of 5 or 6 on either or both Importance of Weight and Importance of Shape items in conjunction with one or more regular eating disorder behaviors were classified as symptomatic.

In order to effect a clearer separation between groups, data for 247 women who did not meet criteria for any of these groups were excluded. The number of participants in the low-risk, high-risk and symptomatic groups was 332 (43.9%), 83 (11.0%), and 94 (12.4%), respectively. As can be seen in Table 1, participants in the symptomatic group had very high levels of eating disorder psychopathology and impairment in mental health as measured by the SF-12 MCS.

Statistical Analysis

Item non-response varied from 0.6% for the question addressing Naomi's main problem to 6.9% for the question addressing medicines/pills (mean =

TABLE 1 Mean Age, Body Mass Index (BMI) (Kg/M²) and Scores on Measures of Eating Disorder Psychopathology (EDE-Q Subscales) and Health-Related Quality of Life (SF-12 PCS, MCS) Among Young Adult Women Classified as Low-Risk, High-Risk or Symptomatic

	Low risk (<i>n</i> = 332)	High risk (<i>n</i> = 83)	Symptomatic (<i>n</i> = 94)	F	<i>p</i>	Post-hoc
	Mean (SD)	Mean (SD)	Mean (SD)			
Age	27.96 (11.62)	28.21 (9.74)	25.04 (8.67)	2.88	.06	NSD
BMI	23.02 (4.72)	25.39 (6.37)	25.72 (6.89)	12.05	<.001	1 < 2, 3
EDE-Q subscales ⁱ						
Restraint	0.84 (1.02)	2.07 (1.44)	3.55 (1.62)	186.49	<.001	1 < 2 < 3
Eating concern	0.30 (0.44)	1.45 (1.16)	3.17 (1.53)	391.95	<.001	1 < 2 < 3
Weight concern	0.95 (0.86)	3.37 (1.17)	4.52 (1.03)	502.79	<.001	1 < 2 < 3
Shape concern	1.27 (0.96)	3.77 (1.29)	4.76 (1.03)	615.70	<.001	1 < 2 < 3
Global score	0.84 (0.67)	2.66 (1.02)	4.00 (1.12)	560.42	<.001	1 < 2 < 3
SF-12 PCS ⁱⁱ	52.53 (6.69)	52.08 (8.07)	50.96 (9.12)	1.63	.20	NSD
SF-12 MCS ⁱⁱⁱ	48.43 (9.41)	40.02 (12.10)	34.56 (10.69)	77.72	<.001	1 < 2 < 3

i. Eating Disorder Examination Questionnaire subscale and global scores.

ii. Medical Outcomes Study (12-item) Short Form Physical Component Summary scale.

iii. Medical Outcomes Study (12-item) Short Form Mental Component Summary scale.

3.1%). Data are presented as the percentage (%) of participants who endorsed each possible response for each question. Associations between group (low-risk, high-risk and symptomatic) and responses to specific questions were examined by means of Chi-square tests. Where appropriate, standardized residual (SR) values were considered in order to clarify the source of differences that were significant or that approached significance at the .05 level.

RESULTS

Table 2 shows responses to the question concerning Naomi's "main problem". Symptomatic participants were more likely to believe that the main problem was depression (SR = +3.3), and less likely to believe that the main problem was low self-esteem (SR = -2.0), than low- and high-risk participants ($\chi^2 = 32.64$, *df* = 22, *p* = .07).

Responses to the questions concerning the people, treatments or activities, and "medicines/pills" considered most likely to be helpful for Naomi are summarized in Table 3. There were no differences between groups in responses to any of these questions (all *p* > .10).

Concerning the person participants would approach first were they to have a problem such as the one described, the modal response in the low-risk group was "a close friend" (27.3%), followed by "general practitioner" (23.0%), whereas the modal response among high-risk participants was "no-one/I wouldn't want anyone to know" (19.5%), followed

TABLE 2 Perceptions of Naomi's "Main Problem" by Risk/Symptom Profile: Proportion (%) of Participants in Each Group Endorsing Each Option

	Low risk %	High risk %	Symptomatic %
Depression	1.8	2.5	9.6
AN	3.9	1.2	4.3
BN	21.1	19.8	24.5
Stress	0.3	0.0	1.1
Anxiety disorder	4.2	3.7	2.1
Low self-esteem	35.6	37.0	21.3
Poor diet	1.2	1.2	0.0
"Yo-yo" dieting	2.4	3.7	7.4
An eating disorder but not anorexia or bulimia	11.8	13.6	9.6
Mental health problem	14.8	14.8	16.0
No real problem, just a phase	0.6	0.0	2.1
Other	2.1	2.5	2.1

by 'close friend' (15.9%). "No-one/I wouldn't want anyone to know" was also the modal response among symptomatic participants (24.2%), followed by "close friend" (22.0%) ($\chi^2 = 60.72$, $df = 26$, $p < .001$). High-risk (SR = +2.4) and symptomatic (SR = +3.8) participants were more likely to give the response "No-one/I wouldn't want anyone to know" than low-risk participants (SR = -3.2).

In all three groups, the modal response to the question addressing Naomi's likely prognosis, were she to receive the treatment considered appropriate, was "full recovery, but problems will probably re-occur" (43.5%–47.5%), whereas fewer participants believed that there would be "full recovery with no further problems" (18.5%–28.6%). There was a tendency for high-risk and symptomatic participants to be less likely to endorse the "full recovery with no further problems" option than low-risk participants, and vice-versa ($\chi^2 = 15.04$, $df = 8$, $p = .06$).

For all three groups, the modal response to the question addressing the most likely cause of the problem described was "low self-esteem" (low-risk: 37.3%; high-risk: 34.2%; symptomatic: 30.9%). Also in all three groups, the next most frequently endorsed option was "portrayal of the ideal body shape in the popular media" (low-risk: 13.7%; high-risk: 18.4%; probable cases: 19.1%) ($\chi^2 = 37.43$, $df = 32$, $p = .23$).

Responses to the questions addressing perceived severity and acceptability are summarized in Table 4. Symptomatic participants were more likely to report being "extremely sympathetic" (SR = +3.1), and less likely to be "a little sympathetic" (SR = -2.1), than participants in the low- and high-risk groups ($\chi^2 = 22.92$, $df = 8$, $p < .01$). Symptomatic participants were also more likely to have occasionally, often or always thought that it "might not be too bad" to have Naomi's problem than high-risk participants, who were,

TABLE 3 Perceived Helpfulness of Interventions for Naomi's Problem by Risk/Symptom Profile: Proportion (%) of Participants in Each Group Who Reported That Specific Interventions Within Each of Three Categories—Treatments/Activities, People, and Medicines/Pills—Would Be Most Likely To Be Helpful

	Low risk	High risk	Symptomatic
Treatments/activities that might be helpful			
Just talking about the problem	21.0	15.6	17.4
Psychotherapy focusing on past causes	3.2	5.2	4.3
Cognitive behavior therapy	19.4	26.0	17.4
Psychotherapy focusing on relationships	8.7	6.5	8.7
General psychotherapy	4.9	1.3	2.2
Alternative therapy	1.9	1.3	2.2
Relaxation therapy	5.2	7.8	4.3
Assertiveness or social skills training	0.6	2.6	1.1
Admission to public hospital psych ward	0.0	0.0	1.1
Private psych ward	0.6	3.9	0.0
Self-help treatment manual	0.6	0.0	1.1
Getting fitter/increasing exercise	0.0	1.3	1.1
Getting out more/finding new hobbies	10.7	9.1	9.8
Getting info on problem and services	18.1	16.9	23.9
Trying to deal with problem on own	0.3	0.0	1.1
Other	4.5	2.6	4.4
People who might be helpful			
General practitioner (family doctor)	16.3	7.8	16.7
Counsellor	12.5	10.4	15.6
Social worker	1.9	0.0	2.2
Psychiatrist	4.5	6.5	5.6
Psychologist	16.3	19.5	18.9
Family member	6.1	2.6	4.4
Close friend	10.9	7.8	7.8
Dietician or nutritionist	19.2	23.4	21.1
Naturopath or alternate therapist	1.9	1.3	1.1
Community health worker/team	1.6	0.0	1.1
Self help support group	4.5	10.4	2.2
Commercial wt loss program	0.3	2.6	1.1
Other	3.8	7.8	2.2
Medicines/pills that might be helpful			
Vitamins and minerals	64.2	53.9	56.8
Herbal medicines	9.4	18.4	9.1
Anti-depressant	13.5	15.8	22.7
Medication to help relax	0.3	0.0	1.1
None/unsure	13.6	11.9	10.2

in turn, more likely to give these responses than low-risk participants ($\chi^2 = 179.20$, $df = 8$, $p < .001$).

A similar gradient—from low-risk to high-risk to symptomatic—was apparent in responses to the questions addressing the perceived likelihood of Naomi being discriminated against (low-risk : 40.4%; high-risk: 48.1%; symptomatic: 60.6%; $\chi^2 = 12.27$, $df = 2$, $p < .01$) and the perceived prevalence of the problem described (low-risk: modal response =

TABLE 4 Perceptions of the Severity and Acceptability of Naomi's Problem by Risk/Symptom Profile: Proportion (%) of Participants in Each Group Endorsing Specific Responses to Each Question

	Low risk %	High risk %	Symptomatic %
How distressing do you think it would be to have Naomi's problem?			
Not at all distressing	0.3	0.0	2.1
A little distressing	7.0	2.5	5.3
Moderately distressing	10.4	18.5	11.7
Very distressing	49.5	43.2	41.5
Extremely distressing	32.7	35.8	39.4
Have you ever thought it "might not be too bad" to be like Naomi, given that she has been able to lose weight?			
Never	67.7	32.9	13.8
Rarely	22.9	24.4	14.9
Occasionally	7.3	22.0	28.7
Often	1.5	12.2	28.7
Always	0.6	8.5	13.8

10%–30%; high-risk: 30%–50%; symptomatic: 50%–70%; $\chi^2 = 40.00$, $df = 12$, $p < .001$).

As would be expected, the proportion of participants who believed that they might currently have an eating problem differed markedly between groups, although still only half (52.7%) of participants classified as symptomatic believed that they might currently have a problem such as the one described (low-risk: 2.1%, high-risk: 16.9%) ($\chi^2 = 155.99$, $df = 2$, $p < .001$).

DISCUSSION

Summary of Main Findings

We compared attitudes and beliefs concerning the nature and treatment of BN in three groups of women: those at low-risk for an eating disorder, those at high-risk, and those already showing symptoms. The survey addressed a range of topics considered to have implications for health promotion efforts, including problem recognition, beliefs about the helpfulness of treatments and treatment providers, beliefs about prognosis, beliefs about etiological factors, perceptions of prevalence and severity and beliefs about the likelihood of discrimination.

In all three groups, cognitive behavior therapy and self-help interventions, such as "just talking about the problem" and "getting information about the problem and available services," were the "treatments" considered most likely to be helpful, whereas primary care practitioners, namely, general

practitioners and dieticians or nutritionists, counsellors and psychologists were the treatment providers considered most likely to be helpful. Taking vitamins and minerals was also highly regarded, whereas few participants believed that psychotropic medication would be helpful. Also in all three groups, most participants viewed the problem described as being very or extremely distressing and most considered low self-esteem to be the most important etiological factor.

Differences between groups were, however, observed on other items. High-risk and symptomatic participants were more likely than low-risk participants to report that they would not approach anyone for advice or help, were they to have a problem such as the one described, because they would not want anyone to know. High-risk and symptomatic participants also tended to be more negative about the prognosis of someone treated for BN. Symptomatic participants were far more likely to consider bulimic behaviors to be acceptable, and common among women in the community, than participants in the low-risk group, with participants in the high-risk group being intermediate on these questions. Finally, participants with symptoms were more likely than low- and high-risk participants to believe that someone with BN would be likely to be discriminated against, were others to become aware of the problem.

Study Limitations

Several limitations of the present study should be considered when interpreting these findings. First, in the absence of any agreed-upon operational definitions of terms such as “low-risk” and “high-risk,” we developed definitions informed by our previous research. Different findings might have been observed had different definitions been used for one or more groups. Second, this was a study of attitudes and beliefs about BN. Although many aspects of eating disorders mental health literacy appear to cut across diagnostic boundaries (Mond & Hay, 2008), responses to some questions would likely have differed had a vignette of anorexia nervosa or binge eating disorder been presented. Third, recruitment of participants from a student population may limit generalizability, although it may be noted that findings in the low-risk group were similar to those of previous research in a general population sample of women (Mond et al., 2004a,b,c). Fourth, only females were included. Although this made it possible to recruit adequate samples of both high-risk and symptomatic participants, it would be preferable to include males in future research. In our view, a broadening of universal prevention programs to include the attitudes, beliefs, and behaviors of those with whom at-risk and symptomatic individuals interact—including boys and men—will be an important step in increasing the ecological validity of these programs (Austin, 2000; Levine & Smolak, 2006). Moreover,

eating-disordered behavior appears to be increasingly common in men (Hay et al., 2007; Striegel-Moore et al., 2009). Finally, whereas we addressed attitudes and beliefs on a range of issues that previous research suggested might be of interest, other potentially relevant issues were no doubt neglected.

In addition to these methodological limitations, it needs to be recognized that individuals' attitudes and beliefs are only one factor potentially affecting health behaviors (Fishbein & Capella, 2006) and changing attitudes and beliefs relating to health behaviours does not necessarily lead to behavioral change (Webb & Sheeran, 2006). Indeed, one of the disheartening aspects of the early eating disorders prevention literature is that changes in attitudes and beliefs have often not been accompanied by change in risk behaviors (O'Dea & Abraham, 2000). On the other hand, findings from several studies have shown that the attitudes and beliefs of individuals with mental health problems do affect at least some behaviors, including treatment-seeking (Jorm, Christenson & Griffiths, 2006; Meltzer et al., 2000; Mojtabai, Olfson, & Mechanic, 2003), and there is no question that the attitudes and beliefs of the public concerning the nature of mental illness affect the health, and health behaviors, of individuals with mental health problems (Crisp et al., 2000). We hope that the present findings will encourage researchers to explore the potential for inclusion of specific aspects of eating disorders mental health literacy in prevention and early intervention programs.

Study Implications

Arguably, the most notable finding of the present study is the proportion of high-risk and symptomatic participants who appeared to believe that the symptoms of BN are acceptable or even desirable. The perception that it "might not be too bad" to have BN, when taken with the finding of high perceived prevalence, suggests that bulimic behaviors are viewed as normative by many young women with symptoms or at risk. Whereas the ego-syntonic qualities of anorexia nervosa are well-known (Mond, Hay, Rodgers, Owen, & Beumont, 2005; Vitousek, Watson, & Wilson, 1998), it appears that similar thought processes may apply to aspects of more commonly occurring, bulimic-type disorders. Although the direction of the observed associations cannot be determined from the present study, one interpretation is that the perception that bulimic behaviours are normative may increase the likelihood that at-risk individuals develop symptoms (Mond et al., 2004b). Hence, one implication of the present findings is that there is a need to improve public awareness of the nature, prevalence and adverse impact of the spectrum of disordered eating that occurs at the population level (Mond et al., 2009).

The high proportion of participants with symptoms who reported that someone with BN would likely be discriminated against, were the problem

to become known, is also of interest, given that perceived stigma associated with disclosure of bulimic behaviors is a major barrier to treatment-seeking among individuals with eating disorder symptoms (Hepworth & Paxton, 2007). Further, individuals with eating disorders may be particularly likely to be the target of certain stigmatizing attitudes, such as the perception that these individuals “only have themselves to blame” and that they should just “pull up their socks” (Crisp et al., 2000). Stigmatization of this kind may help to explain why almost one quarter of symptomatic participants in the present study reported that they would not approach anyone for advice or help, were they to have a problem such as the one described. Hence, a second implication of the present findings is that programs designed to promote early and appropriate treatment seeking among individuals with symptoms need to work in unison with population-based campaigns designed to improve eating disorders mental health literacy at the population level (e.g., Jorm et al., 2006). Poor insight on the part of sufferers is also likely to be a factor in low or inappropriate treatment-seeking (Mond, Hay, Rodgers, & Owen, 2006b). In the present study, only half of symptomatic participants believed that they might currently have a problem such as the one described, despite high levels of eating disorder psychopathology and impairment in role functioning.

Attitudes and beliefs that were common to all three groups may also be cause for concern. The perception among women that eating disorders are primarily problems of low self-esteem, rather than eating or mental health problems per se, the preference for friends and family as sources of help, and the high regard given to the use of self-help interventions, including taking vitamins and minerals, in the treatment of BN, might all be conducive to low or inappropriate treatment-seeking among individuals with symptoms (Mond, Hay, Rodgers, & Owen, 2008). In addition, the high regard given to primary care practitioners in the treatment of BN, which was also observed in all three groups, indicates the need to evaluate and, if necessary, improve the eating disorders mental health literacy of general practitioners, dietitians and nutritionists and other non-specialist treatment providers (Currin, Waller, & Schmidt, 2009; Hay, Darby & Mond, 2007).

Finally, it is instructive to consider the way in which information is delivered to individuals with different risk/symptom profiles. Strictly speaking, the findings of the present study imply a targeted, rather than a tailored approach, since we have identified attitudes and beliefs common to subgroups of individuals with similar profiles (Kreuter & Wray, 2003). In theory, however, it would not be difficult to employ a tailored approach, for example, by assessing individuals' attitudes and beliefs on a pre-determined set of domains and providing personalized feedback. Approaches of this kind have been employed, with promising results, in other fields of health promotion (e.g., Larimer et al., 2007), and would fit well with recent developments in dissonance-based (Stice, Shaw, Becker, & Rohde, 2008),

social-norms-based (Bergstrom & Neighbors, 2006) and media-literacy-based (Wilsch & Wade, 2009) approaches to eating disorders prevention. Although computer-based eating disorder prevention programs have been developed, to date these programs have been confined to selective prevention approaches in which all participants receive the same program content (Barr-Taylor et al., 2006).

In sum, the present findings suggest that the attitudes and beliefs of individuals with eating disorder symptoms may differ systematically from those of individuals at high risk, but who do not yet have symptoms, and from those at low risk. They also indicate specific attitudes and beliefs that may need to be addressed in universal, selective and indicated prevention programs or, perhaps, some combination of these. Being aware of individuals' characteristic modes of thinking about the nature and treatment of eating-disordered behavior can only improve the ability to refine program content and, in turn, increase the likelihood of success.

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APPENDIX

The Vignette Used in the Mental Health Literacy Survey

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.

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