

**Examination of a Mindfulness-based Prevention Program for Eating Disorders  
and Related Risk Factors**

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A thesis submitted in partial fulfilment of the requirements for the degree of Doctor of  
Philosophy (Clinical Psychology)

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July 2014

## TABLE OF CONTENTS

<b>Table of Contents</b> .....	<b>i</b>
<b>List of Tables</b> .....	<b>vi</b>
<b>List of Figures</b> .....	<b>viii</b>
<b>Abstract</b> .....	<b>ix</b>
<b>Declaration</b> .....	<b>xi</b>
<b>Acknowledgements</b> .....	<b>xii</b>
<b>Glossary of Abbreviations</b> .....	<b>xiii</b>
<b>Chapter 1. Overview and Aims of the Research</b> .....	<b>1</b>
<b>Chapter 2. Introduction and Literature Review</b> .....	<b>7</b>
2.1 Overview .....	7
2.2 Why Focus on Prevention? .....	7
2.3 Theoretically Informed Targets for Prevention.....	11
2.3.1 Models of Causal Pathways for Disordered Eating.....	12
2.3.2 Evidence for Risk Factors Implicated in the Dual-Pathway Model.....	13
2.3.2.1 Thin-ideal internalisation and pressures to be thin.....	13
2.3.2.2 Body dissatisfaction. ....	14
2.3.2.3 Dieting.....	14
2.3.2.4 Negative affect. ....	15
2.4 Empirical Support for Prevention Programs .....	15
2.4.1 Dissonance-Based Interventions (DBIs) .....	16
2.5 Mindfulness as a Viable Alternative to Dissonance-Induction .....	27
2.5.1 Postulated Mechanisms of Action.....	29
2.5.2 Empirical Support for the Application of Mindfulness to Eating Disorders.....	31
2.5.3 Limitations with Mindfulness-Based Approaches .....	33
2.6 Moderators of Intervention Effects .....	35
2.6.1 Intervention Features.....	35
2.6.2 Presenter Characteristics .....	36
2.6.3 Individual Participant Factors .....	37
2.7 Dissemination of Empirically Supported Prevention Programs.....	40
2.7.1 Barriers to Uptake Into Prevention Programs .....	42
2.7.2 Strategies for Enhancing Uptake and Dissemination .....	43
2.8 Summary and Future Directions Adopted by the Current Research .....	44
<b>Chapter 3. Examination of Metacognitive Acceptance for Reducing Body Dissatisfaction and Negative Affect: Effects of Efficacy and Engagement</b> .....	<b>48</b>
3.1 Overview .....	48

3.2	Method .....	49
3.2.1	Participants.....	49
3.2.2	Design .....	50
3.2.3	Procedure.....	50
3.2.4	Acceptance Intervention.....	51
3.2.5	Measures .....	52
3.2.5.1	Outcome measures. ....	52
3.2.5.2	Baseline dispositional measures.....	54
3.2.6	Assessment of Engagement.....	57
3.2.7	Statistical Analyses .....	58
3.3	Results .....	60
3.3.1	Descriptive Statistics.....	60
3.3.2	Effect of Metacognitive Acceptance on Body Dissatisfaction and Negative Affect 63	
3.3.2.1	Manipulation Check.....	63
3.3.2.2	Significance of change over time among groups. ....	63
3.3.3	Effect of Engagement in Metacognitive Acceptance on Outcome Variables .....	64
3.3.3.1	Significance of change over time among groups. ....	64
3.3.3.2	Clinical significance.....	65
3.3.4	Moderators of the Effect of Engagement in Metacognitive Acceptance on the Dependent Variables.....	66
3.3.5	Predictors of Engagement in Metacognitive Acceptance.....	69
3.4	Discussion .....	70
	<b>Chapter 4. A Randomised Controlled Trial of Mindfulness versus Dissonance-based Prevention of Eating Disorders in Young Adult Females .....</b>	<b>77</b>
4.1	Overview .....	77
4.2	Method .....	78
4.2.1	Participants.....	78
4.2.2	Procedure.....	79
4.2.3	Interventions.....	81
4.2.4	Measures .....	84
4.2.4.1	Primary outcome variables.....	84
4.2.4.2	Secondary outcome variables. ....	85
4.2.4.3	Intervention Validity.....	86
4.2.5.1	Intervention Fidelity.....	87
4.2.6.1	Motivation and Readiness to Change.....	87
4.2.6.2	Program Acceptability.....	87

4.2.7	Statistical Analyses .....	88
4.3	Results .....	90
4.3.1	Preliminary analysis .....	90
4.3.1.1	Attendance and adherence.....	90
4.3.1.2	Baseline data. ....	90
4.3.1.3	Intervention fidelity.....	91
4.3.1.4	Intervention validity.....	92
4.3.2	Intervention effects for outcome variables.....	92
4.3.2.1	Supplementary intention-to-treat (ITT) analysis.....	93
4.3.3	Clinical significance.....	100
4.3.4	Qualitative findings.....	103
4.4	Discussion .....	104
<b>Chapter 5. Investigation of Voluntary Participation in Body Image Interventions Among Female University Students..... 112</b>		
5.1	Overview .....	112
5.2	Method .....	112
5.2.1	Participants.....	112
5.2.2	Procedure.....	113
5.2.3	Measures .....	114
5.2.3.1	Demographic information. ....	114
5.2.3.2	Outcome measures. ....	114
5.2.3.3	Risk status. ....	114
5.2.4	Motivational Enhancement Exercise.....	115
5.2.5	Recruitment Flyer and Qualitative Questions .....	115
5.2.6	Design .....	116
5.2.7	Statistical Analyses .....	116
5.3	Results .....	117
5.3.1	Descriptive Statistics.....	117
5.3.2	Ratings and Reasons for Participation, Helpfulness and Confidence .....	117
5.3.3	Current Practices .....	122
5.3.4	Predictors of Participation.....	122
5.3.5	Effect of Motivational Enhancement on Prospective Participation .....	123
5.4	Discussion .....	125
<b>Chapter 6. A Cluster Randomised Controlled Trial of Mindfulness and Dissonance- Based Interventions for Reducing the Risk of Disordered Eating in Female High School Students ..... 134</b>		
6.1	Overview .....	134

6.2	Method .....	135
6.2.1	Design .....	135
6.2.2	Participants.....	135
6.2.3	Procedure.....	136
6.2.4	Interventions.....	139
6.2.5	Measures .....	139
6.2.5.1	Mindfulness.....	142
6.2.5.2	Self-compassion.....	142
6.2.5.4	Risk Status.....	143
6.2.5.6	Program Acceptability.....	144
6.2.6	Statistical Analysis .....	144
6.2.6.1	Data preparation and baseline analysis.....	144
6.2.6.2	Intervention analyses.....	145
6.2.6.4	Clinical significance.....	146
6.3	Results .....	146
6.3.1	Preliminary Analyses .....	146
6.3.1.1	Program Participation.....	146
6.3.1.2	Baseline data .....	147
6.3.1.3	Intervention validity.....	147
6.3.2	Intervention Effects on Outcome Measures .....	151
6.3.2.1	Main effects.....	151
6.3.2.2	Interaction effects.....	151
6.3.2.3	Supplementary intention-to-treat (ITT) analysis.....	161
6.3.2.4	Clinical significance.....	161
6.3.3	Impact of Facilitator .....	168
6.3.3.1	Baseline data.....	168
6.3.3.2	Intervention validity.....	168
6.3.3.3	Intervention effects on outcomes.....	169
6.3.4	Program Acceptability.....	176
6.3.4.1	Students.....	176
6.3.4.2	Teaching staff.....	178
6.4	Discussion .....	179
6.4.1	Complete sample.....	179
6.4.2	Facilitator subset .....	183
6.4.3	Effects of presenter and delivery format .....	186
6.4.4	Limitations .....	188
6.4.5	Summary .....	189

<b>Chapter 7. General Discussion .....</b>	<b>190</b>
7.1 Overview .....	190
7.2 Summary and Implications of Findings .....	190
7.2.1 Engagement in Metacognitive Acceptance .....	191
7.2.2 Efficacy of Mindfulness in a Selective Population .....	191
7.2.3 Efficacy of Mindfulness in a Universal Setting .....	193
7.2.4 Facilitator Expertise as a Moderator of Intervention Effects .....	194
7.2.5 Investigation of Voluntary Participation in Body Image Interventions .....	195
7.2.6 Summary .....	196
7.3 Methodological Considerations.....	196
7.3.1 Low Power .....	197
7.3.2 Potential Selection Bias.....	197
7.3.3 Intervention Development and Delivery .....	198
7.3.4 Demand Effects and Response Biases.....	199
7.3.5 Length of Follow-up .....	200
7.3.6 Selection and Training of Facilitators .....	200
7.4 Directions for Future Research .....	201
7.4.1 Target Age.....	201
7.4.2 Intervention Characteristics.....	203
7.4.3 Methods for Dissemination .....	206
7.5 Conclusion.....	208
<b>References.....</b>	<b>210</b>
<b>Appendix A Participant Information and Consent Forms .....</b>	<b>241</b>
Appendix A1 Participation Information and Consent for the Study of Engagement ....	242
Appendix A2 Participant Information and Consent for the RCT with Young Adults....	244
Appendix A3 Invitation to Schools to Participate in the High School Trial .....	248
Appendix A4 Principal Consent for Participating Schools.....	249
Appendix A5 Information and Consent for Parents and Students.....	250
<b>Appendix B Research Materials .....</b>	<b>254</b>
Appendix B1 Transcript of Video Instructions Used in the Study of Engagement .....	255
Appendix B2 Facilitator Guides for Mindfulness-Based Program Used in the RCT with Young Adults.....	257
Appendix B3 Facilitator Guides for Dissonance-Based Program Used in the RCT with Young Adults.....	278
<b>Appendix C Additional Graphs and Tables .....</b>	<b>293</b>

## LIST OF TABLES

Table 2.1 <i>Summary of Features and Outcomes of Dissonance-Based Intervention Trials</i> .....	19
Table 3.1 <i>Baseline Demographic, Body Dissatisfaction, and Dependent Variables for Randomised Conditions</i> .....	61
Table 3.2 <i>Zero-order Correlations Between All Variables for Total Sample</i> .....	62
Table 3.3 <i>Between-Groups Pairwise Comparisons and Effect Sizes (Cohen's <i>d</i>) at Final Assessment Controlling for Post-Induction Assessment</i> .....	64
Table 3.4 <i>Post-hoc Analysis: Between-Groups Pairwise Comparisons and Effect Sizes (Cohen's <i>d</i>) at Final Assessment Controlling for Post-Induction Assessment</i> .....	65
Table 3.5 <i>Clinical Significance as Indicated by Number of People Judged to be Very Improved</i> .....	66
Table 3.6 <i>Univariate Predictors of Nonengagement Compared to Engagement in Metacognitive Acceptance</i> .....	70
Table 4.1 <i>Intervention Features</i> .....	82
Table 4.2 <i>Means and Standard Deviations for Intervention Validity and Outcome Measures for Each Condition across Time, with Main and Interaction Effects</i> .....	94
Table 4.3 <i>Effect Sizes (Cohen's <i>d</i>) for Between-Groups Pairwise Comparisons Controlling for Baseline Assessment and BMI</i> .....	96
Table 4.4 <i>Effect Sizes (Cohen's <i>d</i>) for Between-Groups Pairwise Comparisons Controlling for Baseline Assessment and BMI, Intention-to-Treat (ITT)</i> ..	98
Table 4.5 <i>Clinical Significance as Indicated by Within-Group Effect Sizes (Cohen's <i>d</i>) and Number of People Who Experienced Reliable Change</i> .....	101
Table 5.1 <i>Untransformed Means, Standard Deviations and Zero-order Correlations Between All Variables for Total Sample (N = 121)</i> .....	119
Table 5.2 <i>Frequencies of Reasons for Participation, Helpfulness and Confidence Ratings, for Total Sample and by Risk Status</i> .....	120
Table 5.3 <i>Individual Predictors of Interest and of Likelihood of Participation, Controlling for BMI and Weight Discrepancy</i> .....	124
Table 5.4 <i>Means and Standard Deviations for All Variables by Group, and Between-Group Differences for Individual Predictor Variables at Baseline</i> .....	124
Table 6.1 <i>Intervention Features</i> .....	141
Table 6.2 <i>Means (and Standard Deviations) for Outcome Measures by Condition, Time and Risk Status</i> .....	149
Table 6.3 <i>Adjusted Means (and Standard Errors) of Outcome Measures By Condition, Time, And Risk Status, Controlling for Baseline</i> .....	152
Table 6.4 <i>Main and Interaction Effects of Condition, Time, and Risk Status</i> .....	154
Table 6.5 <i>Effect Sizes (Cohen's <i>d</i>) for Between-Groups Pairwise Comparisons Controlling for Baseline Assessment</i> .....	159
Table 6.6 <i>Effect Sizes (Cohen's <i>d</i>) for Between-Groups Pairwise Comparisons Controlling for Baseline Assessment, Intention-to-Treat Analysis</i> .....	163

Table 6.7 <i>Effect Sizes (Cohen's d) for Within-Group Changes From Baseline to Each Follow-Up Assessment</i> .....	165
Table 6.8 <i>Number and Percentage of Participants who Experienced a Clinically Significant Change from Baseline to 6-month Follow-up, Based on Reliable Change Indices</i> .....	167
Table 6.9 <i>Adjusted Means (and Standard Errors) of Outcomes by Condition and Time for Facilitator Subset</i> .....	171
Table 6.10 <i>Main and Interaction Effects of Condition and Time for Facilitator Subset</i> .....	172
Table 6.11 <i>Effect Sizes (Cohen's d) for Between-Groups Pairwise Comparisons from the Current Facilitator Subset and the Whole Sample</i> .....	174
Table 6.12 <i>Post-Intervention Assessment of Program Acceptability</i> .....	176

## LIST OF FIGURES

Figure 2.1. Dual-Pathway model of bulimic pathology, reproduced from Stice (2001) .....	13
Figure 3.1. Participant flow throughout the study.....	61
Figure 3.2. Difficulties with Emotion Regulation as a Moderator of Acceptance Training on Negative Affect.....	68
Figure 3.3. Escape-Avoidant Coping as a Moderator of Acceptance Training on Negative Affect .....	68
Figure 3.4. Mindfulness as a Moderator of Acceptance Training on Negative Affect .....	69
Figure 4.1. Participant flowchart.....	80
Figure 6.2. Participant flowchart.....	138
Figure 6.3. Weight Concerns (Screen) over time, by condition, among low risk participants. Error bars represent 95% confidence intervals.....	156
Figure 6.4. Weight Concerns (Screen) over time, by condition, among high risk participants. Error bars represent 95% confidence intervals.....	156
Figure 6.5. Negative affect across time points by low and high risk status, adjusted for baseline covariate of .30. Error bars represent 95% confidence intervals.....	157
Figure C.1. Weight and shape concerns over time, by condition. Error bars represent 95% confidence intervals.....	294
Figure C.2. Weight concerns (screen) over time, by condition. Error bars represent 95% confidence intervals.....	294
Figure C.3. Dietary restraint over time, by condition. Error bars represent 95% confidence intervals.....	295
Figure C.4. Sociocultural pressures over time, by condition. Error bars represent 95% confidence intervals.....	295
Figure C.5. Self-compassion over time, by condition. Error bars represent 95% confidence intervals.....	296
Figure C.6. Eating disorder symptoms over time, by condition. Error bars represent 95% confidence intervals.....	296
Figure C.7. Psychosocial impairment over time, by condition. Error bars represent 95% confidence intervals.....	297

## ABSTRACT

Prevention of eating disorders represents an important goal due to damaging long-term impacts on health and well-being, modest treatment outcomes, and low treatment seeking among individuals at risk. The present research therefore investigated a novel prevention approach based on mindfulness, with the aim of progressing knowledge regarding successful strategies for reducing risk of disordered eating.

This research first sought to investigate individual engagement in metacognitive acceptance, a core concept within mindfulness practice. Female undergraduate students underwent a body dissatisfaction induction procedure, received training in metacognitive acceptance or no training (control), and were assessed on engagement. Non-engagement in acceptance was associated with negative affect, emotion regulation difficulties and avoidant coping. Acceptance training significantly reduced weight and appearance dissatisfaction and negative affect relative to control, with effects moderated by mindfulness, emotion regulation difficulty and avoidant coping. These findings provided support for the short-term efficacy of metacognitive acceptance, and identified the need to cater for those with emotion related difficulty when delivering acceptance-based interventions.

The next objective was to conduct a controlled comparison of a mindfulness-based versus a dissonance-based program with respect to reducing risk of disordered eating in young females. This was conducted initially with a sample of young adult women experiencing body concerns, and due to limitations conferred by a small sample, was also conducted as a class-based intervention with senior female high school students. Regarding the young adults, mindfulness participants demonstrated short-term improvements in weight and shape concern, dietary restraint, thin-ideal internalisation, eating disorder symptoms and related impairment relative to control.

In contrast, dissonance participants did not show significant improvements over control on any outcomes. Within the high school sample, results favoured dissonance with respect to reductions in weight concerns and negative affect; however, the pattern of results was generally weaker across the range of risk factors. In a subsample of students receiving instruction from a facilitator with a higher level of expertise in mindfulness training, positive effects for the mindfulness intervention on key risk factors emerged over follow-up. These findings support the efficacy of mindfulness-based prevention, with stronger effects seen in the older age group.

Due to low recruitment, a further study investigated voluntary participation in selective eating disorder prevention programs and evaluated a motivational approach to increasing participation. Female undergraduate students were randomised to a motivational or control condition, presented with a flyer for a prevention trial and assessed regarding participation. Interest and likelihood of participation was low overall. Lack of time was the most commonly endorsed reason, with participants high on weight concerns more likely to cite the group format of the intervention as a deterrent. Belief in the helpfulness of body image programs and personal ineffectiveness were significant predictors of interest in participation. The motivational approach was not effective in increasing participation. Consequently, future eating disorder prevention efforts relying on voluntary participation may benefit from emphasising specific benefits during promotion and ensuring delivery in a time-flexible format that avoids stigmatisation.

Collectively, these findings provide support for further research regarding the application of mindfulness in a prevention context. Questions that need to be addressed include best practice regarding the optimum population, delivery format and dissemination strategies of various prevention approaches to ensure maximum impact on the prevention of eating disorders.

## DECLARATION

I certify that this thesis does not incorporate without acknowledgement any material previously submitted for degree or diploma in any university; and that to the best of my knowledge and belief it does not contain any material previously published or written by another person except where due reference is made in the text.

A handwritten signature in black ink, appearing to read 'Melissa Atkinson', with a decorative flourish at the end.

Melissa Atkinson

BSc (Hons)

## ACKNOWLEDGEMENTS

It is important to consider a number of moderating factors on the outcome of this thesis (hopefully in the positive direction!) and thank them for their contribution.

It perhaps goes without saying that first thanks goes to my esteemed supervisor, Professor Tracey “Boss” Wade (Cohen’s  $d > 1!$ ). Thanks for being a foundational support: your knowledge, organisation (!), and encouragement have been valuable indeed.

Thanks also to the Butterfly Research Institute for the financial support that enabled me to focus on my research and not scrounging up a dollar for dinner. Being able to attend international conferences was a highlight of my candidature.

A big cheers to those who made this project possible on a practical level: to Ben Maddock, super IT guy, for technical assistance (and patience!) with creating and making endless changes to the online tools; to Anne, Peta, Deb, Amy, Lisa, and Stacey for assistance with recruitment, intervention facilitation, and fidelity assessments; and heartfelt thanks to the participants who took part in the various stages of this research, and the schools for their willingness to be involved.

Finally, thanks to those who made this thesis possible on every other level: my family and friends. Thanks Mum, Dad, Jase, Sam, Tyler, Blake, Maya and Shelly. It has been a topsy-turvy couple of years and I have appreciated your support – despite the infinite jokes about me sitting around doing nothing all day as a uni student! And to “the gang”: Anne/Osh, Mike/Moliver, Nicole/Reido, Rach/Hiller, Caitlin/Hitcho, Sam/Sammy. Seriously guys, this adventure would have been a much drearier affair without you all.

## GLOSSARY OF ABBREVIATIONS

AN = Anorexia Nervosa

BMI = Body Mass Index

BN = Bulimia Nervosa

CAMM = Child and Adolescent Mindfulness Measure

CBT = Cognitive Behaviour Therapy

CBT-E = Cognitive Behaviour Therapy – Enhanced

CIA = Clinical Impairment Assessment

DERS = Difficulties with Emotion Regulation Scale

DBI = Dissonance-Based Intervention

DSM = Diagnostic and Statistical Manual of Mental Disorders

ED = Eating Disorders

EDE-Q = Eating Disorders Examination – Questionnaire

EDI-BD = Eating Disorder Inventory –Body Dissatisfaction subscale

EDI-IE = Eating Disorder Inventory – Ineffectiveness subscale

EDNOS = Eating Disorders Not Otherwise Specified

FFMQ = Five Facion Mindfulness Questionnaire

MBI = Mindfulness-Based Intervention

PANAS-X = Positive and Negative Affect Scales - Expanded

NA = Negative Affect

USA = United States of America

VAS = Visual Analogue Scale

WCS = Weight Concerns Scale

WOC-EA = Ways of Coping – Escape-Avoidance subscale

WSC = Weight and Shape Concern

## Chapter 1.

### Overview and Aims of the Research

Eating disorders, even at subthreshold levels, are associated with numerous damaging consequences, including an increased risk for mortality and impairment across multiple health dimensions. To compound this issue, many individuals do not seek assistance, and those that do often do not achieve positive treatment outcomes. Considerable effort has therefore been undertaken to substantiate risk factors contributing to the onset and maintenance of eating pathology, to develop programs targeting those risk factors that are modifiable, and to evaluate such programs with respect to reducing the risk of disordered eating. Significant progress has been made towards this goal over the past two decades; however, there remains a need for continued refinement and improvement.

One of the most significant advancements in the area of eating disorder prevention has been the move towards designing programs that target theoretically and empirically established risk factors in the development of eating disorders. A model that has now received a great deal of empirical support is the dual-pathway model of bulimic pathology (Stice, 2001; Stice & Agras, 1998), which posits that perceived pressures to be thin and internalisation of the thin-ideal leads to body dissatisfaction and concerns over weight and shape, which in turn leads to eating pathology via negative affect and dieting behaviour. In an effort to target the first link in this pathway, dissonance-based interventions (DBIs) aim to induce cognitive dissonance – the psychological discomfort that results from holding conflicting attitudes (Festinger, 1957) – with respect to the pursuit of the thin-ideal. Such dissonance theoretically produces attitudinal change in order to relieve such tension, which in this context means the reduction of the level of “buy-in” or internalisation

of the thin-ideal, and therefore any ensuing body dissatisfaction. Although such dissonance-based efforts have evidenced success in reducing risk factors and onset for eating disorders, they traditionally have not targeted negative affect, which has been shown to be one of the two more robust predictors of eating pathology along with weight and shape concerns (Jacobi & Fittig, 2010). Additionally, dissonance-based interventions are still in the early stages of establishing cross-cultural validity given that evaluations to date have primarily been conducted within the United States of America.

Thus, a significant addition to the prevention field would be to develop prevention approaches that target negative affect in addition to body concerns and examine the resulting impact on risk factors and eating disorder onset. Given that it has been conceptualised as a skill for regulating negative experience, mindfulness represents a strategy that may be well suited for ameliorating risk factors for disordered eating and specifically targeting both body dissatisfaction and negative affect in the pathway to eating pathology. Specifically, mindfulness denotes the practise of non-judgmental awareness and acceptance of experience on a moment-to-moment basis (Kabat-Zinn, 2006). To date, there have been no studies that have evaluated a mindfulness-based approach in the context of eating disorder prevention. Additionally, much of the research assessing mindfulness-based approaches in related areas has suffered from methodological limitations such as insufficient sample sizes, lack of control or active comparison conditions, and limited follow-up. Also, many mindfulness-based approaches are time-intensive. This is not conducive to dissemination in a prevention context where individuals may not exhibit a pressing need for intervention and therefore may lack motivation to engage with lengthy programs. Thus it is important to assess the viability of a relatively brief mindfulness-based prevention program in comparison to a leading and empirically

supported active intervention.

Two additional areas for enhancing prevention efforts are identifying moderators of intervention effects in the pursuit of maximising benefit, and elucidating best practice for dissemination of programs once their efficacy has been evaluated. While previous research has identified features leading to larger intervention effects for prevention programs generally, and has additionally investigated moderators with specific regard to dissonance-based interventions, little is known about what factors may impact on the extent of benefit conferred by a mindfulness-based approach. With regard to dissemination, it is important to understand what factors might prevent an individual from engaging in interventions aimed at improving body concerns and to explore strategies that can be used to facilitate uptake into interventions, so as to reach a greater number of individuals at risk.

Consequently, the overarching purpose of this thesis was to contribute to the progress of eating disorder prevention with respect to these areas of improvement. Within this framework, the principal aim was to design a mindfulness-based program and to evaluate it with respect to reducing risk for disordered eating in a high-risk sample of older adolescents and young adult females with body image concerns. This involved two primary objectives: 1) to assess predictors of engagement in metacognitive acceptance, a key component in mindfulness practice, as well as moderators of the intervention impact on key risk factors of body dissatisfaction and negative affect, using a representative sample of older adolescent and young adult females; and 2) to incorporate these findings regarding engagement and moderators of benefit into designing a mindfulness-based prevention program of similar duration and intensity to the leading dissonance-based intervention, and evaluate both programs within a randomised controlled trial using a high risk sample of young

adult females experiencing body image concerns. This also enabled a secondary objective: to validate the dissonance-based program in an Australian context.

Due to significant difficulty in recruiting sufficient participants for this trial, two additional objectives were formulated over the course of this research. To begin with, it was deemed important to investigate barriers to voluntary participation in body image interventions among young adult females, and to examine an experimental strategy for increasing likelihood of participation, so as to aid in future dissemination to this population. The second additional objective was to conduct a controlled evaluation of these programs using school-based delivery with an older adolescent female sample of senior high school students, to enable an evaluation while avoiding reliance on voluntary participation.

As such, the following thesis is structured according to these aims. **Chapter 2** presents a review of eating disorder prevention research with a focus on avenues to refine and improve prevention efforts. The importance of targeting theoretically and empirically supported risk factors within prevention programs is highlighted, with particular reference to the dual-pathway model of bulimic pathology. A review of empirical support for dissonance-based interventions is provided. Next, a rationale for a novel mindfulness-based approach to prevention is presented in the context of a call to develop new approaches that target negative affect. Following this, a review of factors for maximising prevention efforts is reviewed, including a consideration of features associated with successful outcomes in previous prevention research, and an outline of factors specifically posited to moderate the benefit of mindfulness. Finally, the importance of being able to disseminate effective strategies to the population most at risk is discussed, and presents potential barriers to participation and a rationale for an experimental strategy for increasing participation.

Given that previous research had shown the difficulty of optimal engagement

in an acceptance-based strategy for reducing negative mood (Singer & Dobson, 2007; 2009), it was critical to assess factors that may prevent engagement and to use this information to cater for these individuals within a more comprehensive prevention program. Thus, **Chapter 3** describes an experimental study in which female undergraduates completed baseline measures, underwent a body dissatisfaction induction, received training in metacognitive acceptance and asked to implement it, and were then measured on key risk factors of body dissatisfaction, negative affect, and engagement in the technique. Logistic and moderated regression analyses were conducted to enable the identification of barriers to engagement and moderators of intervention effects, in order to facilitate the development of a program with sensitivity to these factors.

With an incorporation of these findings, a prevention program was designed based on mindfulness principles and evaluated against a dissonance-based intervention and an assessment-only control in a sample of young adult females, outlined in **Chapter 4**. Both interventions adopted a small group format run over three 1-hour weekly sessions, and facilitated by a postgraduate in clinical psychology (author). All participants completed assessments at baseline, post-intervention, 1-month and 6-month follow-ups, and included measures of key risk factors, eating disorder symptoms and related psychosocial impairment, as well as qualitative assessment of acceptability. Efficacy is indicated by analyses of between-group differences at each assessment point while controlling for baseline scores, as well as clinical significance indicated by within-group effect sizes and reliable change indices. This is the first study to assess mindfulness as a prevention approach with a high-risk sample; however, findings are limited by the small sample obtained due to slow recruitment.

In order to determine the reasons for recruitment difficulty, **Chapter 5**

reports a study in which the predictors of interest and likelihood of voluntary participation in body image interventions were examined, along with the results of an experimental attempt to increase likelihood of participation based on a motivational enhancement technique. This was conducted with first-year female undergraduates, and provides important insight into future dissemination of prevention programs.

In **Chapter 6**, both the mindfulness and dissonance-based programs were adapted for class-based delivery and evaluated in a controlled trial with senior female high school students. Given the difficulties associated with selection of high-risk candidates within school-based delivery, the interventions were delivered universally to all participants regardless of risk. Thus, it provides a comparison to the selective and slightly older sample presented in Chapter 4. Another point of difference with the earlier implementation is that additional facilitators were required due to the requirement of teaching lessons concurrently. Given evidence that the use of dedicated interventionists with appropriate knowledge and training is associated with greater intervention effects, additional analyses present findings from a subset of students taught by the author in order to approximate the effects that could be expected with suitable selection and training of facilitators.

**Chapter 7** integrates the findings from the four studies conducted in the context of their contribution to the advancement of eating disorder prevention. In particular, conclusions are made regarding the usefulness of mindfulness as a prevention strategy and recommendations regarding the delivery format and audience for which it is best suited. The limitations of the current body of work are also discussed as is a consideration of future directions for prevention.

## **Chapter 2.**

### **Introduction and Literature Review**

#### **2.1 Overview**

This chapter aims to synthesise relevant areas of the eating disorder literature in order to provide justification for the components of the research that follows. As such, the critical need for eating disorder prevention and early intervention is first provided. Theoretically informed targets for prevention are then outlined and the current state of empirical evidence for resulting interventions reviewed, with a particular focus on programs utilising cognitive dissonance induction as an established and empirically supported strategy. Next, a rationale for a novel approach to prevention based on mindfulness is presented by delineating theorised mechanisms of action with respect to reducing eating disorder risk factors, and reviewing empirical support for existing mindfulness-based approaches. A consideration of factors posited to moderate intervention effects of preventive strategies is then discussed. Finally, the importance of capturing individuals at risk is emphasised, with a consideration of both barriers to and strategies for effective dissemination of empirically supported programs.

#### **2.2 Why Focus on Prevention?**

Eating disorders and their constellation of associated risk factors constitute a considerable threat to the health of society, both to the physical and psychological well-being of the individual, and to the wider social and economic tapestry. Reports of prevalence estimates indicate the significant number of people experiencing eating disorders. In Australia, a twin study conducted among 1002 females aged 28 to 39 reported lifetime prevalence at 1.9% for AN and 3.5% for BN and with the addition of partial syndromes, figures estimate that between 8.7% and 15.9% of women will

suffer a clinically significant eating disorder in their lifetime (Wade, Bergin, Tiggemann, Bulik, & Fairburn, 2006; Wade, Crosby, & Martin, 2006). Among adolescents, recent prospective data from females suggests alarming prevalence rates between 5.8% and 13.4% for the presentation of any DSM-IV eating disorder (8.5 to 15.2% using DSM-V criteria), with prevalence increasing from early to mid and late adolescence and onset peaking between the ages of 16 and 20 (Allen, Byrne, Oddy, & Crosby, 2013; Stice, Marti, & Rohde, 2013; Stice, Marti, Shaw, & Jaconis, 2009). There is also evidence to indicate prevalence has risen over time, particularly among young females aged 15 to 24 (Hoek & Hoek, 2006). Consistent with this, population based surveys in Australia indicated a doubling of disordered eating behaviours over a 10-year period to 2005 (Hay, Mond, Buttner, & Darby, 2008), and increases in diagnostic behaviours have been observed among college students in the USA (White, Reynolds-Malear, & Cordero, 2011).

Clinical eating disorders are associated with substantial burden. BN and AN confer the 8<sup>th</sup> and 10<sup>th</sup> leading causes of disease and injury for females aged 15 to 24 living in Australia, measured in terms of disability-adjusted life years (Australian Institute of Health and Welfare, 2007). Individuals suffering with an eating disorder are likely to experience a wide array of serious physical and mental health problems both concurrently and into adulthood (Johnson, Cohen, Kasen, & Brook, 2002), leading not only to lowered quality of life for the individual, but to productivity losses, carer burden, and significant costs to the health care system (Hay & Mond, 2005; Simon, Schmidt, & Pilling, 2005; Striegel-Moore et al., 2008). For example, it has been shown that adolescents and young adults with eating disorders access the emergency department at a greater rate (Dooley-Hash, Lipson, Walton, & Cunningham, 2013), and eating disorders accounted for 14% of hospital separations of a mental or behavioural nature among young people in Australia (Australian

Institute of Health and Welfare, 2007). Eating disorders are also associated with elevated mortality rates compared to non-affected individuals, with much higher rates than for other psychiatric disorders (Arcelus, Mitchell, Wales, & Nielsen, 2011). A recent meta-analysis of 36 studies reported overall standardised mortality rates of nearly six times higher than the general population for AN, and twice as high for BN and EDNOS (Arcelus et al., 2011). Rates of suicide and suicide attempts are also elevated among eating disorders (Arcelus et al., 2011; Crow et al., 2009; Franko & Keel, 2006), again being associated with one of the highest across psychiatric disorders (Harris & Barraclough, 1998).

It is not only clinical eating disorders that are of concern. Partial syndrome and residual cases of disordered eating are associated with significant distress and impairment (Baer, Fischer, & Huss, 2006) and are in fact the most common presentation of disordered eating seen in treatment, with 40 to 60% of cases not meeting criteria for a full diagnosis (Fairburn et al., 2007; Ricca et al., 2001; Thomas, Vartanian, & Brownell, 2009). Notably, comparison studies have suggested very little difference with AN and BN in terms of severity of eating and general psychopathology (Crow, Stewart Agras, Halmi, Mitchell, & Kraemer, 2002; Thomas et al., 2009). Furthermore, subclinical presentations of disordered eating behaviours are very common among young females (Berg, Frazier, & Sherr, 2009; Eisenberg, Nicklett, Roeder, & Kirz, 2011; Mond, Hay, Rodgers, & Owen, 2006; Patton et al., 1997), and have been associated with significant impacts on health and well-being in adolescent girls (Touchette et al., 2011) and young adult women (Wade, Wilksch, & Lee, 2012). Moreover, body image disturbance alone is associated with damaging impairments (Johnson & Wardle, 2005; Neumark-Sztainer, Paxton, Hannan, Haines, & Story, 2006), which is likely to affect a large number of young people given that body image is consistently rated in the top three concerns of young Australians aged

12 to 24 (Mission Australia, 2010, 2011, 2012).

Clearly, the high cost of eating disorders presents a compelling argument for prioritising effective intervention in order to reduce these debilitating impacts. Unfortunately, treating eating disorders is not an easy undertaking. Recent reviews of outcomes across eating disorders indicate that up to 40% of individuals will still suffer with an eating disorder at follow-up (Berkman, Lohr, & Bulik, 2007; Keel & Brown, 2010). Even the leading eating disorder treatment, enhanced cognitive behavioural therapy (CBT-E), is associated with only moderate recovery rates for both BN (61.4%) and EDNOS (45.7%) at 60-week follow-up (Fairburn et al., 2009). Thus, despite advances, there is still much progress to be made in terms of effective treatments, particularly for AN (Hay, 2013; Watson & Bulik, 2012). Moreover, treatment for eating disorders is expensive. In addition to the often lengthy course of professional therapy necessary for cognitive and behavioural treatments, inpatient treatment for AN is the second most expensive treatment after cardiac artery bypass surgery in the private hospital sector (Pratt & Woolfenden, 2003).

There is also evidence that significant numbers of individuals with disordered eating are not even seeking or accessing treatments. A systematic review of studies comprising 1581 community cases of eating disorders indicated that only 17% to 32% were seeking treatment (Hart, Granillo, Jorm, & Paxton, 2011), and a study of adolescents reported a similarly low figure of 22% of those with a current eating disorder who had received appropriate psychiatric care in the preceding year (Johnson et al., 2002). Such low treatment-seeking may be attributed to poor cognizance of there being a problem (perhaps due to the ubiquitous nature of many unhealthy attitudes and practices among younger females), feeling their concerns did not warrant therapy, wishing to avoid shame and stigmatisation, or practical barriers to access such as finance or waiting lists (Cachelin & Striegel-Moore, 2006; Meyer,

2005; Mond et al., 2007). Regardless of the reasons, it is clear that providing treatment – even effective ones – is not sufficient to ameliorate the damage caused by eating disorders. Consequently, taken together with the significant detriment to individual health and high socio-economic burden, it becomes imperative to focus on prevention: elucidating and targeting key risk factors for the development of eating disorders that are amenable to intervention prior to the onset of clinical levels of severity. In this context, prevention is conceptualised as the successful reduction in risk factors rather than targeting symptoms of eating disorders *per se*.

### **2.3 Theoretically Informed Targets for Prevention**

Progress in the identification of risk factors for the development and maintenance of eating pathology has enabled the refinement of eating disorder prevention practices by providing clear targets for early intervention. Theoretically, targeting such established risk factors reduces current and future risk for eating disorder pathology by disrupting developmental pathways. Comprehensive reviews highlight the multi-dimensional nature of eating disorder development, acknowledging that a range of factors work together (e.g., biological, environmental, socio-cultural, and psychological) and that no individual factor in isolation will produce an eating disorder (Jacobi, Hayward, de Zwaan, Kraemer, & Agras, 2004; Striegel-Moore & Bulik, 2007). Nevertheless, certain characteristics have been identified as conferring a greater risk for later eating pathology. Among fixed factors, female gender has consistently been identified given that eating disorder presentations are found more predominantly in females than in males (Hudson, Hiripi, Pope Jr, & Kessler, 2007; Striegel-Moore & Bulik, 2007). It is also acknowledged that the greatest period of risk coincides with transitional developmental periods of adolescence and young adulthood (Jacobi, Hayward, et al., 2004). Consequently, many prevention and early intervention efforts have targeted

young females in a bid to prevent the development of entrenched disordered eating patterns.

Longitudinal and experimental investigations have also identified and substantiated a number of variable psychological and sociocultural risk factors which better lend themselves to modification via intervention, including: thin-ideal internalisation; body dissatisfaction and concerns over weight and shape; dieting; negative affect and emotion regulation difficulties; perfectionism; low self-esteem, ineffectiveness, and interoceptive awareness; avoidant coping style; sociocultural pressures, peer influences and receiving eating or weight-related comments or criticism (Jacobi, Hayward, et al., 2004; Stice, 2002). Of these, weight and shape concerns and negative affect have emerged as two of the most robust risk factors (Jacobi & Fittig, 2010). Given the numerous factors that have been identified, it is important to also develop an understanding of how these factors may work together in order to provide causal pathways and enable specific intervention points.

### **2.3.1 Models of Causal Pathways for Disordered Eating**

Various theoretical models have been developed that aim to describe how different risk factors work together to increase risk for eating disorders. Those that implicate the roles of key risk factors of weight concerns and difficulties relating to negative emotions include the transdiagnostic model (Fairburn, Cooper, & Shafran, 2003), and the cognitive-interpersonal model (Schmidt & Treasure, 2006). A model that additionally includes an awareness of the sociocultural environment is the Dual-Pathway model of bulimic pathology (Stice, 2001; Stice & Agras, 1998), seen in Error! Reference source not found.. This model posits that symptoms may arise through either negative affect, excessive dieting, or interactions between the two, which develop as a result of body dissatisfaction ensuing from pressures to be thin (from media, parents, and peers) and internalisation of the thin-ideal. Prospective

support for the model has been provided using a community sample of adolescent girls over a 20-month period (Stice, 2001).

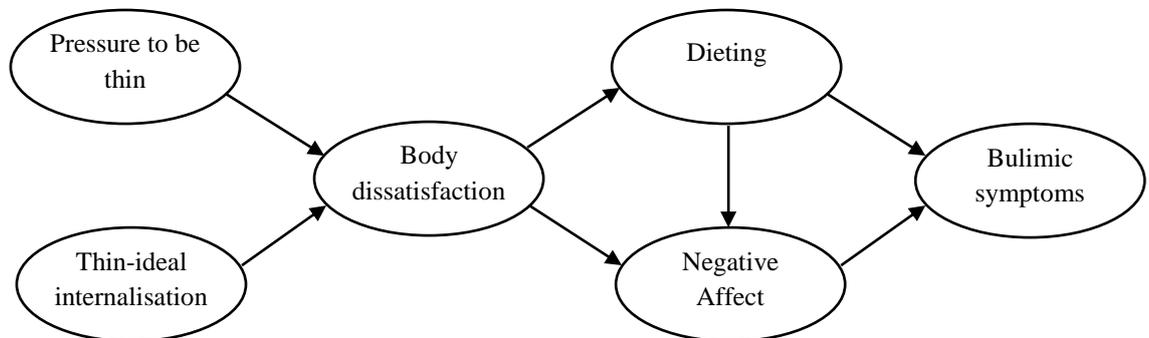


Figure 2.1. Dual-Pathway model of bulimic pathology, reproduced from Stice (2001)

### 2.3.2 Evidence for Risk Factors Implicated in the Dual-Pathway Model

**2.3.2.1 Thin-ideal internalisation and pressures to be thin.** Thin-ideal internalisation is an important risk factor occurring early in the posited causal pathway and refers to the level of individual subscription or “buy-in” to body image ideals promoted by the media, family and peers (Thompson & Stice, 2001). A meta-analysis of cross-sectional studies indicated that internalisation and perceived pressures had a significantly stronger relationship to poor body image than did simple awareness of the ideals (Cafri, Yamamiya, Brannick, & Thompson, 2005). A number of prospective studies have identified both internalisation and sociocultural pressures to be thin as predictors of more proximal risk factors of body dissatisfaction, dieting, and negative affect, as well as eating pathology (Cattarin & Thompson, 1994; Field et al., 2001; McKnight Investigators, 2003; Stice & Agras, 1998; Stice, Mazotti, Krebs, & Martin, 1998; Stice, Presnell, & Spangler, 2002; Stice & Whitenton, 2002; Wilksch & Wade, 2010). Experimental studies have also found that internalisation of the thin-ideal predicted body dissatisfaction and depression after exposure to idealised images in adolescent girls (Durkin & Paxton, 2002), and

that exposure to social pressures increased body dissatisfaction in young women (Stice, Maxfield, & Wells, 2003). In addition, path analyses have identified the mediational role of internalisation in the relationship between media, parental and peer influences, and body dissatisfaction in early adolescents (Keery, van den Berg, & Thompson, 2004).

**2.3.2.2 Body dissatisfaction.** Body dissatisfaction and weight concerns have been demonstrated as a consistent and robust risk factor of eating disorders (Jacobi & Fittig, 2010), with numerous prospective and experimental studies providing empirical support. For instance, body dissatisfaction has consistently been found to prospectively predict symptoms of eating disorders in both adolescents (Attie & Brooks-Gunn, 1989; Johnson & Wardle, 2005; Killen et al., 1996; Killen et al., 1994; Wertheim, Koerner, & Paxton, 2001; Wilksch & Wade, 2010) and young adults (Ghaderi & Scott, 2001; Graber, Brooks-Gunn, Paikoff, & Warren, 1994). Additionally, a recent 8-year prospective study of adolescent girls identified body dissatisfaction as the most potent predictor of eating disorder onset (Stice, Marti, & Durant, 2011). Body dissatisfaction has also been found to predict increases in dieting and negative affect (Stice & Bearman, 2001; Stice et al., 1998), providing evidence for the developmental pathway to eating pathology.

**2.3.2.3 Dieting.** Dieting is a very often a direct precursor of eating disorders (Jacobi, Hayward, et al., 2004). Australian research using a population cohort of adolescents has shown that dieting at a severe level increased the risk for the development of an eating disorder within six months by 18 times (Patton, Selzer, Coffey, Carlin, & Wolfe, 1999). In addition, dieting was a prospective predictor of bulimic symptoms in large samples of adolescent girls (Johnson & Wardle, 2005; Killen et al., 1996; Killen et al., 1994). Stice's prospective test of the dual-pathway model (2001) also showed that when controlling for dieting, body dissatisfaction no

longer significantly predicted bulimic symptoms, implicating the pathway through dieting behaviour.

**2.3.2.4 Negative affect.** In longitudinal studies of adolescents, a latent negative affect and attitudes variable prospectively predicted the development of disordered eating for both girls and boys, where the latent variable consisted of depression, negative emotionality, interoceptive awareness, ineffectiveness, and body dissatisfaction (Leon, Fulkerson, Perry, Keel, & Klump, 1999). Negative affect also predicted later onset of bulimic pathology and compensatory behaviours in prospective studies of female adolescents (Stice & Agras, 1998; Stice et al., 2002). A recent 8-year prospective analysis implicated depressive symptoms in amplifying the pathway from body dissatisfaction to eating disorder onset (Stice, Marti, & Durant, 2011). In addition, negative affectivity was found to be a severe risk correlate for anorexia nervosa in a retrospective case-control study assessing exposure to a range of risk factors (Pike et al., 2007).

## **2.4 Empirical Support for Prevention Programs**

Although early prevention efforts suffered from the lack of a theoretical underpinning and evidenced limited effectiveness – even increasing pathology in some cases (Austin, 2000) – later generations of prevention programs have sought to focus on reducing established risk factors for eating pathology (Stice, Becker, & Yokum, 2013; Stice & Shaw, 2004). Over 60 programs have been developed and evaluated in controlled trials to date, including those based on media literacy (e.g., Wilksch & Wade, 2009), healthy weight management (e.g., Stice, Trost, & Chase, 2003), cognitive and behavioural techniques (e.g., Bearman, Stice, & Chase, 2003; Butters & Cash, 1987), self-esteem enhancement (e.g., Wade, Davidson, & O'Dea, 2003), and sociocultural pressures and peer interactions (e.g., Richardson & Paxton, 2009), in either focused or multidimensional interventions (e.g., McVey, Tweed, &

Blackmore, 2007).

These approaches have had varying degrees of impact across both adolescent and young adult samples. In their meta-analytic analysis, Stice et al. (2007) examined 66 published and unpublished prevention studies and found 51% evidenced significant reductions in one or more established risk factors and 29% demonstrated significant reductions in eating pathology; however, also reported that the average effect of prevention programs was small. They indicated that programs containing content which targeted thin-ideal internalisation, body dissatisfaction, and negative affect using dissonance-induction and body acceptance content were associated with larger effects. Two further reviews have highlighted the effectiveness of media-literacy and dissonance-based approaches for improving body image and reducing risk for eating disorders in undergraduates (Yager & O'Dea, 2008) and schools-based programs (Yager, Diedrichs, Ricciardelli, & Halliwell, 2013). To date, the only programs that have demonstrated the reduction in future onset of eating disorders include the combined psychoeducation and CBT program (*Student Bodies*; Taylor et al., 2006), a healthy weight management intervention (Stice, Rohde, Shaw, & Marti, 2012), and a dissonance-based intervention (*The Body Project*; Stice, Marti, Spoor, Presnell, & Shaw, 2008; Stice, Shaw, Burton, & Wade, 2006). Dissonance-based programs in particular have now been evaluated in multiple trials and replicated across independent laboratories and are the only eating disorder prevention program considered to be efficacious according to guidelines of the American Psychological Association (APA; Stice, Becker, et al., 2013).

#### **2.4.1 Dissonance-Based Interventions (DBIs)**

Dissonance-induction is recognised as a powerful tool for activating desired change in attitudes and behaviours. Hailing from social psychology, the theory of cognitive dissonance describes the psychological tension occurring as a result of

holding competing beliefs, attitudes, and behaviours, and the resulting drive to alter them in order to reduce discomfort and maintain internal consistency (Festinger, 1957). Within an eating pathology framework, induction of dissonance is specifically targeted at reducing thin-ideal internalisation as a risk factor for eating disturbances and is achieved via participation in activities designed to challenge existing body-related schema, including discussing the costs and consequences of pursuing the thin ideal, examining the negative impact of thin-ideal messages, and countering the thin ideal within role-plays (Stice, Shaw, Becker, & Rohde, 2008). Dissonance is additionally amplified when participants engage in activities voluntarily (Festinger, 1957) and in front of an audience (Green, Scott, Diyankova, & Gasser, 2005). Adopting such a counter-attitudinal position is presumed to create dissonance with, and therefore lead to, reduced subscription to the thin-ideal so as to reinstate internal equilibrium. Within the context of the dual pathway model, targeting thin-ideal internalisation theoretically has a flow-on effect of reducing body dissatisfaction that in turn diminishes the risk for the development of dieting, body-related negative affect, and ultimately, disordered eating.

An initial prevention program involving dissonance-inducing activities was developed by Stice and associates (Stice, Mazotti, Weibel, & Agras, 2000) and has since been the subject of multiple efficacy and effectiveness trials. A summary of studies conducted to date is found in **Table 2.1**. Based on these studies, DBIs have accumulated substantial support for their capacity to produce reductions in risk factors implicated in the dual-pathway model (i.e., thin-ideal internalisation, body dissatisfaction, dieting, negative affect, and eating disorder symptoms) through to follow-up in young females. Although there is evidence that DBIs can be effective when groups are led by peer facilitators or endogenous providers, and also when delivered via the internet (although evidence is preliminary and suggests that further

adjustments are needed to produce comparable effects to face-to-face group-based interventions), the strongest support exists for DBIs using a group session format and led by a trained and qualified facilitator. Additionally, an examination of moderators of intervention effects for DBIs suggests that a greater benefit is found for late adolescents and young adults than for mid-adolescent individuals (Müller & Stice, 2013).

Table 2.1

*Summary of Features and Outcomes of Dissonance-Based Intervention Trials*

Study	Sample	Approach	Conditions	Format	Assessment	Outcomes
Halliwell & Diedrichs, 2013	Young high school students $N = 106$ $M_{age} = 12.07$	Universal	1. DBI 2. Control (regular lessons)	4 (20min) weekly face-to-face small group sessions	Pre, Post, media exposure at 1-month	DBI produced significant reductions in BD and IN, but not dietary restraint, compared to control at post, and increased resilience to media exposure at 1-month (no increase in state BD).
Stice, Rohde et al., 2013 Study 1 (peer-led)	Female undergraduates $N = 171$ $M_{age} = 20.9$	Selective	1. Peer-led DBI 2. Clinician-led DBI 3. Educational brochure	4 (1hr) weekly face-to-face small group sessions	Pre, post, 1 year	Both DBIs produced greater reductions in risk factors than control at post. Clinician-led demonstrated stronger effects than peer-led at post and 1-year.
Stice, Rohde et al., 2013 Study 2 (peer-led)	Female undergraduates $N = 148$ $M_{age} = 21.0$	Selective	1. Peer-led DBI 2. Waitlist control	4 (1hr) weekly face-to-face small group sessions	Pre, post	Peer-led DBI showed greater reductions than control across all outcomes at post.
Stice, Butryn et al., 2013 (effectiveness)	Female college students $N = 408$ $M_{age} = 21.6$	Selective	1. DBI (led by college clinicians) 2. Educational brochure	4 (1hr) weekly face-to-face small group sessions	Pre, post, 1-year	DBI demonstrated greater reductions in risk factors and symptoms than control at post and 1-year.

*Note.* DBI = Dissonance-based intervention, BD = body dissatisfaction, IN = thin-ideal internalisation, NA = negative affect

Table 2.1 (continued)

*Summary of features and outcomes of dissonance-based intervention trials*

Study	Sample	Approach	Conditions	Format	Assessment	Outcomes
Stice, Rohde et al., 2012 (internet)	Female college students $N = 107$ $M_{age} = 21.6$	Selective (BD)	1. DBI (internet) 2. DBI (group) 3. Educational video 4. Educational brochure	6 (30-40min) internet modules over 3 weeks 4 (1 hr) face-to-face small group sessions	Pre, Post	Similar effects for internet and group based DBI. However, group more effective at producing reductions in risk factors relative to educational controls.
Ramirez et al., 2012 (couple-based)	College dating couples $N = 209$ $M_{age} = 19.14$	Universal (couples only)	1. DBI 2. Assessment-only control	2 (2hr) weekly group sessions	Pre, post (1 week), 50% completed 1-month	DBI reduced pressures to be thin, IN, state BD, and actual-ideal discrepancy, but not NA, compared to control.
Becker et al., (2012) (peer-led)	Female college athletes $N = 168$ $M_{age} = 18.94$	Universal (semi-mandatory)	1. DBI 2. Healthy weight	3 (60-80min) weekly group sessions	Pre, post, 6-week, 1-year	Both interventions produced significant reductions in risk factors through to follow-up. Qualitative findings indicated athletes preferred healthy weight approach.
McMillan et al., 2011 (enhanced DBI)	Female undergraduate students $N = 124$ $M_{age} = 20.9$	Selective	1. High dissonance 2. Low dissonance 3. Waitlist	4 (1hr) weekly face-to-face small group sessions	Pre, post, 3-month	High dissonance demonstrated a greater impact than low dissonance at post, however minimal differences by 3-months.

*Note.* DBI = Dissonance-based intervention, BD = body dissatisfaction, IN = thin-ideal internalisation, NA = negative affect

Table 2.1 (continued)

*Summary of features and outcomes of dissonance-based intervention trials*

Study	Sample	Approach	Conditions	Format	Assessment	Outcomes
Becker et al., 2010 (peer-led)	Female college students $N = 106$ $M_{age} = 18.73$	Universal (sorority, semi-mandatory)	1. DBI 2. Healthy weight	2 (105min) weekly group sessions	Pre, Post, 8-week, 8-month, 14-month	Both interventions reduced risk factors and symptoms through to follow-up. Advantage for DBI to post for IN, NA and bulimic pathology.
Perez, Becker & Ramirez, 2010 (peer-led)	Female college students $N = 182$ $M_{age} = 19.32$	Universal (sorority, semi-mandatory)	1. DBI	2 (2hr) group sessions	Pre, post, 5-month, 1-year	DBI reduced risk factors (negative affect not measured) through to follow-up with effect sizes comparable to other effectiveness studies.
Stice, Rohde et al., 2009; 2011 (effectiveness)	Female high school students $N = 306$ $M_{age} = 15.7$	Selective	1. DBI 2. Psychoed brochure	4 (1hr) weekly group sessions	Pre, Post, 6-month, 1-year, 2-year, 3-year	Significant reductions in risk factors and symptoms relative to brochure at post, with the exception of NA. Effects smaller than for efficacy study overall, advantage over control not maintained over follow-up except for body dissatisfaction at 2-year, and symptoms at 3-year.
Becker, Bull et al., 2008	Female college students $N = 188$ $M_{age} = 18.64$	Universal (sorority, semi-mandatory)	1. DBI (peer-led) 2. Media advocacy	2 (2hr) weekly group sessions	Pre, post, 7 weeks, 8 months	Both interventions reduced IN, BD, dietary restraint and bulimic pathology at 8 months. DBI more effective for low risk participants.

*Note.* DBI = Dissonance-based intervention, BD = body dissatisfaction, IN = thin-ideal internalisation, NA = negative affect

Table 2.1 (continued)

*Summary of features and outcomes of dissonance-based intervention trials*

Study	Sample	Approach	Conditions	Format	Assessment	Outcomes
Mitchell et al., 2007	Female college students $N = 93$ $M_{age} = 19.56$	Selective	1. DBI 2. Yoga 3. Assessment-only control	6 (45min) weekly sessions	Pre, Post	No difference between yoga and control. DBI produced greater reductions on disordered eating, drive for thinness, BD, and alexithymia and anxiety than either yoga or control.
Becker, Smith & Ciao, 2006	Female college students $N = 90$ $M_{age} = 18.66$	Universal (sorority, semi-mandatory)	1. DBI (peer-led) 2. Media Advocacy	2 (2hr) group sessions	Pre, post, 7 weeks, 8 months	Effects for DBI were greater than media advocacy for dietary restraint, IN, and BD, but not bulimic pathology.
Stice et al., 2006, 2008 (efficacy)	Female high school and undergraduate students $N = 481$ $M_{age} = 17.0$	Selective	1. DBI 2. Healthy weight 3. Expressive writing 4. Assessment-only	3 (1hr) weekly group sessions	Pre, post, 6-month, 12-month, 2-year, 3-year	DBI showed greater reductions in risk factors and symptoms than all other conditions at post, and relative to assessment-only over long-term follow-up. Healthy weight also showed significant reductions over control conditions. Some effects faded over follow-up. Both reduced symptom onset through to 3-year follow-up.

*Note.* DBI = Dissonance-based intervention, BD = body dissatisfaction, IN = thin-ideal internalisation, NA = negative affect

Table 2.1 (continued)

*Summary of features and outcomes of dissonance-based intervention trials*

Study	Sample	Approach	Conditions	Format	Assessment	Outcomes
Roehrig et al., 2006 (dismantling)	Female college students $N = 78$ $M_{age} = 21.16$	Selective	1. Full DBI 2. Counterattitudinal advocacy (dissonance tasks only)	3 (45-60min) weekly group sessions	Pre, post, 1-month, 3-month	Both versions reduced risk factors during intervention and maintained through follow-up with the exception of NA for the dismantled version.
Green et al., 2005	Female college students $N = 155$ $M_{age} = 18.95$	Universal (randomly selected from volunteer pool)	1. High dissonance 2. Low dissonance 3. Control	2 (2hr) weekly group sessions	Post, 4-week follow-up	High dissonance participants showed fewer symptoms than low dissonance, however neither condition produced significant reductions over control in eating disorder attitudes and behaviours.
Becker et al., 2005	Female college students $N = 161$ $M_{age} = 19.95$	Universal-selective (sorority, self-selected)	1. DBI 2. Media psychoeducation 3. Waitlist control	2 (2hr) weekly group sessions	Pre, post, 1-month	Both DBI and media psychoeducation reduced dietary restraint, BD, and eating pathology. Only DBI reduced IN compared to control. No difference in size of effects between DBI and media intervention.
Matusek et al., 2004	Female college students $N = 84$ $M_{age} = 19.86$	Selective	1. DBI 2. Psychoeducation (healthy behaviours) 3. Waitlist control	1 (2hr) group session	Pre, 4 weeks	Both DBI and psychoeducation demonstrated improvements in BD, drive for thinness, IN, and eating pathology compared to control.

*Note.* DBI = Dissonance-based intervention, BD = body dissatisfaction, IN = thin-ideal internalisation, NA = negative affect

Table 2.1 (continued)

*Summary of features and outcomes of dissonance-based intervention trials*

Study	Sample	Approach	Conditions	Format	Assessment	Outcomes
Stice, Trost & Chase, 2003	Female high school and undergraduate students $N = 148$ $M_{age} = 17.4$	Selective	1. DBI 2. Healthy weight 3. Waitlist control	3 (1hr) weekly group sessions	Pre, post, 1-month, 3-month, 6-month	Both interventions decreased IN, NA, and bulimic symptoms relative to control. No effects for BD, dieting, and generally faded over time.
Stice, Chase, et al., 2001	Female young adults $N = 87$ $Modal\ age = 19$	Selective	1. DBI 2. Healthy weight	3 (1hr) weekly group sessions	Pre, post, 1-month	DBI reduced risk factors and bulimic symptoms through to 1-month follow-up. Benefit also seen for Healthy Weight, with a smaller impact overall.
Stice, Mazotti et al., 2000	Female college students $N = 30$ $Modal\ age = 18$	Selective	1. DBI 2. Waitlist control	3 (1hr) weekly group sessions	Pre, post, 1-month	DBI produced decreases in risk factors and symptoms compared to control, some fading over follow-up.

*Note.* DBI = Dissonance-based intervention, BD = body dissatisfaction, IN = thin-ideal internalisation, NA = negative affect

Support for the efficacy of dissonance is demonstrated through evaluations finding DBIs to be superior at reducing key eating disorder risk factors with respect to assessment-only control, waitlist or delayed intervention, expressive writing, psychoeducation, and yoga (**Table 2.1**). Nevertheless, researchers have found less clear superiority with comparisons of dissonance to the more active approaches of media advocacy and healthy weight management. For example, Becker and colleagues (2010) demonstrated that although only dissonance was effective amongst low-risk participants, they found similar effects of dissonance and media advocacy (similar content without the specific dissonance-inducing activities) among high-risk individuals. Additionally, although initially conceived as a placebo control, a healthy weight management intervention has also shown significant effects not vastly different from dissonance in a number of studies (e.g., Matusek, Wendt, & Wiseman, 2004; Stice, Trost, et al., 2003), and has consequently been developed into a prevention program in its own right aimed at preventing both disordered eating and obesity (Stice, Rohde, Shaw, et al., 2012). Thus, it is important to consider the specific role of dissonance-induction in reducing risk outcomes.

Proposing that many elements of the DBI developed by Stice and colleagues had a psychoeducational or cognitive-behavioural basis, Roehrig et al. (Roehrig, Thompson, Brannick, & van den Berg, 2006) sought to compare the full Stice intervention (*The Body Project*) with a dismantled version containing only the counter-attitudinal tasks. They found the dismantled version produced comparable results with the full intervention in terms of reducing thin-ideal internalisation, body dissatisfaction, dieting behaviours, and bulimic symptoms. Although decreases in negative affect by treatment completion were observed for both interventions, this was not maintained to 1-month follow-up for the dismantled version as it was for the

full intervention. These findings indicate the efficacy of dissonance-inducing tasks alone; however, also suggests the superiority of the full intervention with respect to negative affect.

Another avenue to examining the specific impact of dissonance-induction is to assess mediators of DBI effects. Using data from their large trials, Stice and colleagues (Stice, Marti, Rohde, & Shaw, 2011; Stice, Presnell, Gau, & Shaw, 2007) demonstrated mediational support for the hypothesised mechanism of DBIs, namely, that changes in eating disorder symptoms were predicted by reductions in thin-ideal internalisation both directly and indirectly through body dissatisfaction. This was corroborated in a rigorous test of mediation by Seidel et al. (Seidel, Presnell, & Rosenfield, 2009), who also showed support for reverse mediation (i.e., change in outcome predicted change in mediators) suggesting a complex pathway to change. Interestingly, they also indicated that thin-idealisation and body dissatisfaction did not mediate changes in negative affect. This may explain the smaller effect sizes of the dissonance intervention on this variable noted in efficacy studies. Thus it seems important to look at ways to enhance the direct impact of intervention strategies on negative affect, given that this is a powerful risk factor for disordered eating.

In contrast, other studies have shown that specific dissonance-induction may not be the sole contributor to salutary effects of DBIs. Two studies have compared a high-dissonance program with a low-dissonance program in a sample of female undergraduates (Green et al., 2005; McMillan, Stice, & Rohde, 2011). Although they both found somewhat greater effects for the high-dissonance condition, McMillan et al. noted that the advantage of high versus low was limited and led to the conclusion that although enhancing dissonance-induction contributes to intervention effects, the importance of general content, nonspecific factors and demand characteristics cannot

be understated. This was also highlighted Stice et al.'s (2007) meta-analysis, noting that nonspecific factors were likely contributors to the range of program content considered to be successful.

An important point to note with regard to the collective empirical support for DBIs is that only two studies have been conducted outside of the USA. The first was undertaken in a universal (although female-only) format with young adolescents aged 12 to 13 (Halliwell & Diedrichs, 2013), and the second in a small non-controlled study with adolescent girls in Iceland schools (Danielsdottir, Agustsdottir, Porsdottir, & Jonsson, 2014). Although limited to short-term effects, both studies demonstrated preliminary support for dissonance (despite smaller effects than for other trials) and therefore provide early encouragement for cross-cultural validity. Nevertheless, DBIs have yet to be explored outside of the USA using a sample consistent with the majority of efficacy studies, that is, high-risk (i.e., selective) older adolescents and young adults, as well as employing random allocation, an active comparison condition and longer follow-up.

## **2.5 Mindfulness as a Viable Alternative to Dissonance-Induction**

Despite the moderate success of dissonance-based programs, there nevertheless remains room for improvement in terms of intervention effects (Stice, Becker, et al., 2013; Stice, Shaw, et al., 2007). This includes a push to not only maximise the effectiveness of established programs, but to continue developing new approaches – as has been noted, creating multiple efficacious programs is likely to assist in dissemination of programs based on variable consumer needs (Stice, Becker, et al., 2013). Body acceptance – learning to appreciate one's body for what it is – has been nominated as being a beneficial component of successful prevention programs (Stice, Shaw, et al., 2007). This has generally been achieved by means of

self-affirmation exercises such as identifying positive features of one's body while standing before a mirror. A conceivable extension may be that acceptance at a higher-order level, such as acceptance of thoughts, feelings and perceptions related to the body, may also prove to be beneficial. Such metacognitive acceptance is facilitated through the practice of mindfulness.

In a psychological context, mindfulness can be defined as the ongoing practise of non-judgemental awareness and acknowledgement of experience in the present moment (Bishop et al., 2004; Brown, Ryan, & Creswell, 2007; Kabat-Zinn, 2003), and has been described as an attentional stance (Kabat-Zinn, 2003). Within this context, acceptance refers specifically to the non-judgemental experiencing of thoughts, feelings, and sensations simply as they are (Hayes, 2004), and forms an integral part of mindfulness practice. Thus, practising mindfulness with acceptance cultivates a state in which potentially distressing thoughts or feelings are experienced, for as long as they are present, without making judgments or evaluations and without the need to avoid, change, or otherwise control them. This allows for the development of psychological and behavioural flexibility, which is thought to be a key process in reducing distress and potentially unhelpful behaviour (Hayes, 2004). Interestingly, mindfulness and acceptance are passive therapeutic techniques in that symptom reduction comes as a by-product rather than as a therapeutic goal (Baer, 2003).

Mindfulness and acceptance-based strategies can be conceptualised as skills for regulating the response to aversive events, which have been shown to alter one's relationship with negative experience (Teasdale, Segal, & Williams, 1995). In the context of eating disorder prevention, they can be used to encourage more adaptive responses to the unwanted and often unavoidable negative cognitions and emotions

associated with body image disturbance (e.g., social comparisons, dissatisfaction with self, depression and anxiety). For this reason, such approaches are well-positioned to target negative affectivity, a goal that has been highlighted both generally (Sauer & Baer, 2009), and specifically within eating disorders prevention (Stice, Becker, et al., 2013). Additionally, mindfulness skills learned for a specific complaint may bestow a general health benefit in that they can subsequently be applied in the enhancement of all aspects of life and health, both adaptive and maladaptive. This is a valuable contribution in light of the suggestion to explore strategies affecting multiple outcomes (Stice, South, & Shaw, 2012).

### **2.5.1 Postulated Mechanisms of Action**

There are a number of hypothesised mechanisms by which mindfulness may exert its effects that have particular relevance in its application to reducing eating disorder risk factors. First, the ability to observe non-judgementally and without evaluation encourages a non-critical view of self (Kristeller & Hallett, 1999), which is particularly salient for body image disturbances involving negative self-evaluation as a core component (Stice & Shaw, 2002; Fairburn et al., 2003). Thus the negative consequences of self-criticism and harsh evaluations are theoretically reduced through the practice of mindfulness-based acceptance. This is supported by related findings that an increase in self-compassion was associated with lower levels of body shame and disordered eating among female undergraduates (Breines, Toole, Tu, & Chen, 2013).

Second, practicing such non-judgemental awareness and acceptance promotes a decentred view of internal events as being separate to the self and viewed as passing phenomena, variously known as de-identification, cognitive defusion or the “observer perspective” (Holzel et al., 2011). This may serve to alter one’s

relationship with his or her experience by allowing thoughts and feelings to be observed merely as thoughts and feelings and not necessarily depictive of oneself or even an accurate identification of reality (Baer, 2003); thereby decreasing the likelihood of automatic responses and promoting a sense of flexibility and control (Stewart, 2004). This is important in ameliorating initial reactions to triggers, but also for preventing secondary emotions that may arise (Baer, Fischer, & Huss, 2006). In support, recent explorations of the mechanisms of mindfulness have highlighted the capacity for mindfulness to assist emotion regulation through improvements in executive control (Holzel et al., 2011; Teper, Segal, & Inzlicht, 2013). This highlights the potential of mindfulness for improving the difficulties with emotion commonly seen in those with disordered eating.

A third hypothesised mechanism of interest is that of exposure, which may lead to a lessening of distress through extinction learning (Baer, 2003; Kabat-Zinn et al., 1992; Holzel et al., 2011). Rather than turning away from unpleasant thoughts and emotions, mindfulness-based acceptance encourages the constant observation of them and therefore may produce a lessening in intensity through extinguishing of conditioned responses. Recent explorations of exposure theory have indicated that cessation of distress may come via new memory learning regarding the stimulus (Craske, Kircanski, Zelikowsky, Mystkowski, Chowdhury, & Baker, 2008; Holzel et al., 2011), in the place of previous fear-based responses. Although seemingly counter-intuitive at first, the simple act of allowing oneself to become exposed to rather than evading negative thoughts and emotions regarding the body may reduce instinctive and often maladaptive avoidance coping approaches, which have shown to be a risk factor for eating disorders (Ghaderi & Scott, 2001).

With reference to the dual pathway model (Stice, 2001; Stice & Agras,

1998), mindfulness may succeed in reducing risk for disordered eating by first, enabling an increased capacity to refrain from automatic responses when confronted with the thin-ideal and related sociocultural pressures and thereby reducing the ensuing experience and impact of body dissatisfaction; and second, by reducing the intensity and impact of experiences with a negative affective component (e.g. dissatisfaction, anxiety, depression, dieting) that pose risk for disordered eating if and when they do occur. Accordingly, mindfulness could be expected to have a more pervasive impact than cognitive dissonance on everyday functioning and quality of life since its effects are exerted not only on the thin-ideal and body-related pressures, as for dissonance, but also more globally on general negative affect and emotion regulation. Nevertheless, it is also likely that both dissonance and mindfulness-based interventions engage distinct capacities and therefore will appeal to and be effective for individuals in different ways.

### **2.5.2 Empirical Support for the Application of Mindfulness to Eating Disorders**

The application of mindfulness and acceptance-based approaches with specific regard to eating disorders remains in infancy. Nevertheless, some promising advances have been made. In particular, there has been a rapid growth in recent years of studies investigating mindfulness-based treatment approaches. Such approaches include adaptations of dialectical behaviour therapy (DBT; Linehan, 1993), mindfulness-based cognitive therapy (MBCT; Segal, Williams, & Teasdale, 2002), and acceptance and commitment therapy (ACT; Hayes, Strosahl, & Wilson, 1999) to eating disorder samples, as well as mindfulness-based eating awareness (MB-EAT; Kristeller & Wolever, 2011) and other similar approaches. Although over 30 investigations including quasi-experimental pilot studies and case-series have now

been conducted (Masuda & Hill, 2013), randomised controlled trials are only available for modified DBT for BN (Hill et al., 2011; Safer, Telch, & Agras, 2001) and BED (Safer, Robinson, & Jo, 2010; Telch, Agras, & Linehan, 2000, 2001); MBCT for disordered eating behaviours (Alberts, Thewissen, & Raes, 2012); MB-EAT for binge-eating (Kristeller, Wolever, & Sheets, 2013); ACT for clinical and subthreshold ED and comorbidity (Juarascio, Forman, & Herbert, 2010) and for body image and disordered eating attitudes (Pearson, Follette, & Hayes, 2012). Systematic reviews indicate that collectively, these investigations provide early support for the effectiveness of such treatments, particularly for BN and BED; however, emphasise the preliminary nature given methodological limitations such as the predominance of uncontrolled studies, small sample sizes, and failure to compare with empirically supported active treatments (Masuda & Hill, 2013; Wanden-Berghe, Sanz-Valero, & Wanden-Berghe, 2011).

Although the application of mindfulness and acceptance-based interventions for eating disorders is in the early stages of validation as a treatment strategy – indicating the worthwhile pursuit of mindfulness with respect to disordered eating – the benefit as a comprehensive preventive intervention for disordered eating has yet to be explored. Nevertheless, recent experimental research has demonstrated the utility of a mindfulness-based prevention approach in that a brief metacognitive acceptance intervention (5 min) resulted in short-term amelioration of two important eating disorder risk factors: weight dissatisfaction (Wade, George, & Atkinson, 2009) and negative mood (Singer & Dobson, 2007, 2009). Additionally, mindfulness has been associated to have an inverse association with eating pathology and related psychological distress in female undergraduates (Lavender, Gratz, & Tull, 2011; Masuda, Hill, & Tone, 2012; Masuda, Price, & Latzman, 2012), indicating that

improving facets of mindfulness may improve risk outcomes in this population.

Support for mindfulness in a prevention context also comes from outside of the eating disorder field. Mindfulness has been applied in the context of relapse prevention for depression (Piet & Hougaard, 2011; Williams & Kuyken, 2012) and substance abuse (Witkiewitz, Marlatt, & Walker, 2005), showing promising findings in both. In addition, mindfulness-based prevention approaches to improving mental health and well-being among young people are in the initial stages of evaluation (Huppert & Johnson, 2010; Kuyken et al., 2013). Kuyken and colleagues showed that a universal schools-based program (*Mindfulness in Schools*) showed high acceptability among 522 adolescents and produced improvements in depressive symptoms, stress, and well-being at post-treatment and 3-month follow-up. Huppert and Johnson delivered a short mindfulness program (4 sessions of 40 mins) to adolescent boys and although they found no significant differences to control on measures of resilience and well-being at post-treatment, they did find that the amount of individual practice was positively associated with better outcomes. This practice effect was also echoed by Kuyken et al. and highlights the importance of practice for achieving benefits with mindfulness training. It is important to note however that neither of these studies employed a long-term follow-up and thus the potential for ongoing benefit is unknown.

### **2.5.3 Limitations with Mindfulness-Based Approaches**

Despite the promising nature of mindfulness-based approaches with respect to disordered eating, research to date has demonstrated a number of limitations that this research aims to overcome. First, as mentioned, mindfulness-based approaches have been examined primarily as a treatment strategy, and with only minimal studies employing a randomised controlled design. The only experimental study that has

assessed the viability of mindfulness as a prevention strategy employed a controlled experimental design but only examined body dissatisfaction and no other risk factors for disordered eating, and was restricted to a brief technique and short-term follow up in the laboratory (Wade et al., 2009). Thus the full prevention potential of a mindfulness approach has not been explored.

Second, mindfulness-based interventions have often been multidimensional in the pursuit of symptom relief, including cognitive and behavioural change-based components, which inherently increases the difficulty of attributing treatment effects to the practice of mindfulness-based acceptance. Moreover, due to the multiple components, such interventions are generally time-intensive (e.g. DBT consists of 20 weekly sessions; MBCT of eight weekly 2-hr sessions) and therefore not amenable to easy dissemination in various contexts.

Third, participants' engagement in mindfulness has been assumed rather than objectively assessed, which has implications for intervention fidelity and mechanisms of benefit. This has been highlighted by recent research involving the application of a metacognitive acceptance strategy for depressive relapse (Singer & Dobson, 2009). Singer and Dobson (2009) found that over a third of participants (40%) failed to successfully engage in the acceptance technique and that this ability to engage was influenced by individual differences such as anxiety and negative attitudes towards negative experience. Further, those who did engage had significantly lower duration of negative mood than those who did not engage. This has important ramifications for intervention programs involving metacognitive acceptance as a central component and, as such, examination of engagement in mindfulness-based acceptance and the identification of barriers to successful engagement are important goals.

## **2.6 Moderators of Intervention Effects**

It is clearly a worthwhile goal to continue to evaluate new program content in pursuit of the best approach to reducing risk for eating disorders and to offer a range of successful interventions; however, another avenue to improving prevention efforts is to investigate and ensure optimal conditions for maximising the intended benefit. As such, it is important to consider potential moderators of intervention effects, including intervention features, presenter characteristics, and individual participant characteristics.

### **2.6.1 Intervention Features**

Features of successful prevention programs that are associated with larger intervention effects have often been highlighted in reviews of prevention efforts. In particular, Stice et al.'s (2007) meta-analysis provides empirical evidence for the importance of how the program is delivered in determining outcomes. The first feature is that interactive programs are more effective than didactic programs. Such programs allow for better engagement with concepts, leading to greater attitudinal and behavioural change via increased positive regard, internalisation of concepts, and ownership (Neumark-Sztainer, Levine, et al., 2006; Shaw, Stice, & Becker, 2009). A second factor is that multi-session programs are generally favoured over single-session approaches (Austin, 2000; Shaw et al., 2009). Theoretically, multi-session programs offer greater opportunity for consideration of concepts and practise of skills. Although a comparative difference between single-session and multi-session programs was only evident for some risk outcomes in meta-analytic analyses, it is important to note that single-session programs consistently failed to produce significant reductions in eating pathology (Stice & Shaw, 2004; Stice, Shaw, et al., 2007). A final point to make with respect to intervention features is that

programs containing psychoeducational content regarding eating disorders and their effects are generally considered to be ineffective in producing desired change, and are associated with smaller intervention effects (Stice, Shaw, et al., 2007). Thus, multi-session interventions that are interactive and contain limited psychoeducation are likely to produce greater benefits in terms of reducing risk for eating disorders.

### **2.6.2 Presenter Characteristics**

There is also evidence that programs delivered by appropriately trained and qualified specialist facilitators is conducive to better outcomes than for teachers or other providers with limited training. This is presumably because they are likely to evidence greater understanding and experience with the program content, have an increased familiarity that may result in more cognitive load available for engaging optimally with the participants during delivery, and additionally, may be more invested in achieving good outcomes. In support of this, Stice et al. (2007) found programs delivered by dedicated interventionists were associated with larger effect sizes than for endogenous providers and that effectiveness studies using endogenous providers have demonstrated smaller effect sizes than efficacy studies (Stice, Rohde, Gau, & Shaw, 2009; Stice, Rohde, Shaw, & Gau, 2011). A further reason for using specialist facilitators comes from an Australian study which found a high level of unhealthy dietary and disordered eating behaviours among home economics and physical education teachers, and additionally reported that these teachers were frequently providing inappropriate advice regarding nutrition and dieting to their students (O'Dea & Abraham, 2001). Thus it appears important to validate programs initially using dedicated facilitators, and if adapting for delivery by endogenous providers, ensuring the best possible selection, training, and supervision of facilitators is provided within practical constraints.

In addition to the specialist role, previous research has also highlighted the teacher presentation style as a potentially critical factor in the effectiveness of prevention programs (Wade et al., 2003), particularly noting the importance of being at ease with student-centred, interactive delivery. This is likely to be a function of training and experience, in addition to personality factors. In conjunction with this, it is conceivable that younger presenters who are closer in age to the participants are likely to be perceived more as peers and therefore may find a greater capacity for connection. Peer-facilitated prevention has been found to be more successful than for the same programs led by adults in many cases for substance abuse prevention (Cuijpers, 2002), and has also resulted in successful outcomes for participants with respect to eating disorders prevention within university sororities (Becker, Smith, & Ciao, 2006; Becker et al., 2010). Identifying with a “peer” may potentially lead to increased engagement and buy-in to the content and therefore maximise the benefit received. This is pertinent for dissonance-based programs that are enhanced through voluntary engagement.

### **2.6.3 Individual Participant Factors**

As highlighted previously, prevention research has demonstrated greater effects for programs delivered to high-risk females and to older rather than younger participants (Müller & Stice, 2013; Stice, Shaw, et al., 2007). However, elucidation of psychological factors that may moderate the usefulness of prevention programs is also a worthwhile goal as it enables the ability to cater for particular individuals and therefore result in greater intervention effects and potentially wider application, providing a valuable opportunity for refining interventions (Kraemer & Gibbons, 2009). Such examination of moderators has commenced for dissonance-based programs, with a recent analysis combining results from three major trials indicating

that baseline thin-ideal internalisation moderated the effect of the intervention on reductions in thin-ideal internalisation and eating disorder symptoms but not body dissatisfaction; and that baseline body dissatisfaction did not moderate any intervention effects (Müller & Stice, 2013). Additionally, depression and negative affect has been shown to be a significant moderator of risk outcomes in dissonance-based intervention (Stice, Rohde, Gau, & Shaw, 2012) as well as a universal prevention program based on media-literacy (Wilksch & Wade, 2014). However, little is known about the moderators of mindfulness-based approaches and this is significant considering the call for a focus on improved treatment efficacy for acceptance-based interventions for eating disorders (Baer, 2003).

The importance of selecting theoretically informed moderators has been highlighted (Kraemer, Wilson, Fairburn, & Agras, 2002). As such, three types of dispositional variables can be hypothesised to be relevant when considering the capacity to utilise mindfulness in the context of an application to reducing risk for disordered eating: dispositional mindfulness, an avoidant coping style, and emotion dysregulation. Mindfulness has been supported as a dispositional quality and is associated in predicted directions with openness to experience and experiential avoidance (Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006; Brown & Ryan, 2003). Perhaps intuitively, those possessing natural mindfulness tendencies already have a foundation for assimilating metacognitive acceptance as a technique for responding to negative experience and therefore are expected to exhibit less resistance. In terms of coping style, it can be suggested that avoidance is diametrically opposed to mindfulness-based acceptance and therefore those who naturally adopt avoidance-based coping strategies in dealing with distress may demonstrate greater difficulty adapting to acceptance-based approaches. Avoidant

coping approaches have also shown to be a risk factor for development of eating disorders (Ghaderi & Scott, 2001) and have differentiated between binge-eaters and non-binge-eaters (Engler, Crowther, Dalton, and Sanftner, 2006).

Finally, mindfulness may be conceptualised as a strategy for managing and moderating emotional experiences (Aldeo et al., 2010; Erisman & Roemer, 2010). In support, acceptance-related facets of mindfulness have been associated with difficulties with emotion regulation and alexithymia (Baer, Smith et al., 2006). Thus, individuals exhibiting poorer emotion regulation skills theoretically may struggle with the concepts of identifying, observing, and releasing internal experiences inherent in a mindfulness approach, and therefore be reticent or unable to engage completely. Additionally, it has been suggested that a reduced capacity for adaptively managing emotional responses may increase the risk of focusing on weight, shape, and eating as an escape or to gain emotional control (Polivy & Herman, 2002), and such difficulties with emotion regulation have been associated with clinical eating disorders (Bydlowski, Corcos, Jeammet, Paterniti, Berthoz, Laurier, et al., 2005). Mood intolerance has also been implicated as a maintenance factor within a cognitive conceptualisation of eating disorders (Fairburn et al., 2003).

A final consideration in the moderation of intervention effect is that of readiness to change, including weariness of body image disturbance and willingness to make changes towards improvement. This is a potentially important motivating factor for engaging with intervention approaches, and thus likely to increase beneficial outcomes. Interestingly, readiness to change was found to be a significant moderator of intervention effects for a healthy weight intervention, but not for dissonance (Stice, Marti, Shaw, & O'Neil, 2008). This is encouraging as it suggests that the dissonance approach can be beneficial for varying levels of baseline

motivation. However, given these contrasting findings, it is important to consider the importance of readiness to change in the context of a mindfulness intervention.

## **2.7 Dissemination of Empirically Supported Prevention Programs**

As well as examining moderators of impact, another avenue for improving eating disorder prevention efforts is through enhancing the capacity for dissemination. Thus, an equally important goal to establishing efficacious approaches is that of moving towards effectiveness and dissemination in real-world settings (Becker, Stice, Shaw, & Woda, 2009; Flay et al., 2005; Marchand, Stice, Rohde, & Becker, 2011). A particular challenge noted by Becker and colleagues (Becker, Ciao, & Smith, 2008) however is the apparent lack of interest on the part of individuals representing the target population, particularly for intervention approaches not relying on high-school delivery (i.e., young adults). This is underscored by the difficulty in recruiting large enough samples to be adequately powered to detect intervention effects in prevention programs, which traditionally have not achieved large effect sizes. For instance, amongst studies recruiting voluntary university-aged females with body image concerns (i.e., a selective sample) for trials involving a face-to-face component, many studies provided individual financial compensation (Bearman et al., 2003; Franko, 1998; Franko & George, 2008; Franko et al., 2005; Matusek et al., 2004; McMillan et al., 2011; Mutterperl & Sanderson, 2002; Stice, Chase, Stormer, & Appel, 2001; Stice et al., 2000; Stice, Rohde, Durant, & Shaw, 2012; Stice, Rohde, et al., 2009; Stice, Rohde, Shaw, et al., 2012; Stice et al., 2006; Stice, Trost, et al., 2003), course credit (Martz & Bazzini, 1999; Matusek et al., 2004; Nicolino, Martz, & Curtin, 2001; Ridolfi & Vander Wal, 2008; Roehrig et al., 2006), or conceded potentially underpowered sample sizes (Celio, 2000; McVey et al., 2010; Mitchell, Mazzeo, Rausch, & Cooke,

2007; O'Brien & LeBow, 2007). Moreover, in many cases, even compensation did not lead to the participation rates that could be expected based on the size of the prospective pools.

Perhaps an exception to this recruitment challenge is that of online prevention programs (Bauer, Moessner, Wolf, Haug, & Kordy, 2009; Lindenberg, Moessner, Harney, McLaughlin, & Bauer, 2011; Morgan, Jorm, & Mackinnon, 2013; Taylor et al., 2006). These studies have achieved larger numbers of interested parties without the offer of compensation, conceivably due to the ease and anonymity inherent in registering and participating. However, this comes with a cautionary aside given that Taylor and colleagues recruited over three years to achieve their sample size ( $N = 480$ ), and both Bauer's and Lindenberg's studies report a surprising number of participants who, despite indicating initial interest and completing screening measures, failed to register for the program itself. This problem of retaining participants has also been noted with internet-based interventions in depression and anxiety (Christensen, Griffiths, & Farrer, 2009). Thus, although it appears that internet-delivered programs represent a potentially successful vehicle for wider dissemination, additional work needs to be done to ensure full participation and compliance in order to reap maximum benefit of the program.

Limited uptake into preventive interventions is an obstacle that has also been documented within fields such as depression (Cuijpers, van Straten, Warmerdam, & van Rooy, 2010; Morgan et al., 2013), substance abuse (Larimer & Crouse, 2007), and family-based interventions (Heinrichs, 2006; Prinz et al., 2001). As suggested by Cuijpers et al., this is likely due to a combination of factors related to the participants themselves (e.g., lack of awareness, stigma), organisation (e.g., lack of resources,

capacity for reach), and the chosen recruitment methods. The identification of such barriers and their solutions represents an important objective as these clearly present a stumbling block to the dissemination and broader implementation of effective preventive strategies, and is a goal that has been echoed specifically within eating disorders prevention (Stice, South, et al., 2012).

### **2.7.1 Barriers to Uptake Into Prevention Programs**

A number of factors may contribute to an individual's disinclination to volunteer for face-to-face interventions aimed at improving body concerns. Practical aspects specific to the delivery of the program such as the location, time demands, and group versus individual format of the intervention are necessary considerations when exploring voluntary engagement. Additionally, positive beliefs and attitudes towards body image interventions would feasibly act as motivators for volunteering. In particular, beliefs regarding perceived helpfulness of programs for body image and confidence that body image can be improved overall are likely to be important contributors. Finally, certain dispositional variables may also play a role in determining interest in participation. Although the presence of body dissatisfaction and concern over weight and shape would appear logically to predict participation in a body image intervention, cognizance of body image as a problem also needs to be present to initiate help-seeking (Mond et al., 2007). Additionally, given that emotion-related difficulties are hypothesised to predict engagement with a mindfulness technique, they may also predict reduced interest towards volunteering in the first instance. Finally, personal ineffectiveness – encompassing feelings of inadequacy and lack of personal control – may also lead to reduced interest in participation due to feelings of helplessness and seeming inability to effect change. This is supported by related work where self-efficacy has been shown to predict

better treatment outcomes within eating disorder populations (Pinto, Heinberg, Coughlin, Fava, & Guarda, 2008; Steele, Bergin, & Wade, 2011). Conversely, ineffectiveness may in fact lead to increased interest due to the perceived need for external help with personal problems.

### **2.7.2 Strategies for Enhancing Uptake and Dissemination**

One potential solution to overcome these barriers and the subsequent lack of individual interest (or limited awareness that there is a problem) is to take a participatory approach: partnering with communities to disseminate programs within broader social systems rather than at the individual level (Becker et al., 2009; Neumark-Sztainer, Levine, et al., 2006). This is an important undertaking, and indeed, Becker and colleagues have successfully implemented partnerships with university sororities and athletic departments to deliver an empirically supported dissonance-based intervention (Becker, Bull, Schaumberg, Cauble, & Franco, 2008; Becker, McDaniel, Bull, Powell, & McIntyre, 2012; Becker et al., 2010; Perez, Becker, & Ramirez, 2010). Additionally, dissonance-based interventions are currently being prepared for dissemination to young people worldwide by Dove, and by the Icelandic government and the state of New York to high school students. Nevertheless, the question remains: can we increase individual interest in interventions when such social systems are hard to access? This is pertinent for countries such as Australia, where there is no sorority framework and limited social systems capturing large numbers of young adult women.

A potential strategy for increasing interest and likelihood of participation in a body image intervention can be conceptualised from within a motivational framework. Within the field of motivation, self-determination theory (SDT; Deci & Ryan, 1985) highlights the interworking of both intrinsic (inherent interest and

satisfaction) and extrinsic factors (external influences), that facilitate self-determined motivation in the service of growth and wellness. Self-determined motivation has been associated with outcomes such as better engagement and performance, behavioural maintenance, and treatment adherence, and is fostered when a goal or behaviour is personally valued (either innately or as a result of internalisation of external elements) and developed with a sense of autonomy, competence, and relatedness (Deci & Ryan, 2000). On this basis, answering questions to elicit views on the thin-ideal and efforts to combat body image concern, without overt leading, may bring these issues to conscious awareness and facilitate independent identification with the importance of proactively engaging in body image improvement efforts. This could be expected to promote self-directed motivation towards participating in body image interventions. Such concerted effort at improving uptake into interventions has not previously been explored and therefore makes an important contribution to improving dissemination of efficacious prevention strategies.

## **2.8 Summary and Future Directions Adopted by the Current Research**

Overall, it is evident that continued pursuit of successful prevention for eating disorders is a vital undertaking, given the severe consequences for health and well-being, moderate treatment outcomes, and low help-seeking. In order to meet this need, there has been a proliferation of prevention approaches developed over the past two decades. Successful programs have targeted theoretically and empirically established risk factors for the development of eating disorders, particularly those implicated in the dual-way model of eating pathology: perceived pressures to be thin, internalisation of the thin-ideal, body dissatisfaction and weight concerns, negative affect, and dieting. Despite substantial progress, areas for continued improvement

remain which provide directions for future research (Stice et al., 2013).

The first area is in the refinement of established approaches to preventing eating disorders. Considerable evidence now exists for the use of dissonance-induction in reducing the risk and onset of eating disorders. The majority of empirical studies have demonstrated that such programs are effective for older adolescent and young adult females, particularly when targeted at those with body image concerns (selective sample) and delivered in an interactive fashion within face-to-face groups. However, there remains a need to conduct efficacy studies using non-USA samples while employing a suitable methodological design (e.g., active comparison and control conditions, validated measures of both risk factors and eating disorder symptoms, and adequate follow-up). This is an important undertaking when considering the transportability of interventions in other countries and cultures.

A second area for improving prevention efforts is to evaluate novel approaches in the pursuit of larger and more sustainable intervention effects, and in order to offer a range of effective strategies for selection based on consumer needs. The application of mindfulness has been presented as a viable strategy for reducing risk for eating disorders, with a particular advantage of targeting negative affect and attitudes – a goal that has been highlighted by Stice and colleagues (2013); however, no studies exist that have assessed the utility of a mindfulness-based prevention program. In addition, the most rigorous test of the efficacy of any new approach is to evaluate it against the leading empirically supported intervention. Thus a comparison of the efficacy of mindfulness with respect to dissonance-induction is warranted. Matching the approaches for non-specific factors (e.g., session length and duration, delivery format, interactive nature, type of facilitator) and sample characteristics

(e.g., older adolescent and young adults with body image concerns) enables a more precise comparison and provides additional assistance in determining the worth of pursuing mindfulness in the context of prevention.

With respect to these first two areas of improvement, the current research evaluates both dissonance and mindfulness-based interventions in an Australian context, within a randomised controlled efficacy trial, and conducted with older adolescent and young adult females. A third area in the enhancement of prevention is identifying moderators of such intervention strategies. Although work is underway with respect to dissonance-induction, relatively little is known about what factors may be important in the usefulness of mindfulness. Given the relatively low rates of optimal engagement in metacognitive acceptance demonstrated in previous research, it is important to identify obstacles to engagement and to assess moderators of intervention effects. This enables the development of program content that is sensitive to these factors, and can identify those for which the intervention may be best suited. Consequently, an initial study was conducted prior to the efficacy trial in order to assess engagement and moderating factors thought to be relevant in the context of mindfulness. These included negative affect and emotion related difficulties, an avoidant coping style, and trait mindfulness.

A final area for extending eating disorders prevention research is to explore ideal approaches to the dissemination of empirically supported programs in order to enable the best possible chance of capturing an at-risk population. Due to the difficulty noted with recruiting volunteers for face-to-face body image interventions, it becomes necessary to consider alternative strategies. A participation approach via partnering with communities (e.g., sororities, athletic departments) has been successful to date, however this is not always feasible. It therefore remains important

to assess individual barriers to uptake into interventions, as well as evaluating strategies for increasing participation. The current research therefore sought to systematically explore factors preventing participation in body image interventions among young women, with respect to the current efficacy trial, and to assess an experimental attempt at increasing motivation and interest for participation.

## Chapter 3.

### Examination of Metacognitive Acceptance for Reducing Body Dissatisfaction and Negative Affect: Effects of Efficacy and Engagement<sup>1</sup>

#### 3.1 Overview

As noted in the previous chapter, metacognitive acceptance is a major component of mindfulness practise, and therefore an important skill to develop during a mindfulness-based intervention. However, previous research has shown the difficulty of optimal engagement in an acceptance-based strategy for reducing negative mood (Singer & Dobson, 2009). It was therefore important to assess factors that may prevent engagement in acceptance, the context of reducing key eating disorder risk factors, and to use this information to maximise the benefit of a more comprehensive mindfulness-based prevention program. There were four objectives for the current research. First, to assess the efficacy of acceptance with respect to reducing body dissatisfaction and negative affect in order to replicate the findings of Wade, George & Atkinson (2009). The second objective was to compare those who did and did not engage in acceptance with respect to the same outcome variables. As acceptance has been shown to produce reliable effects in comparison with other active conditions (see Wade et al., 2009), it was decided that a no-training control group would be sufficient as a comparison group. Based on the findings of Singer and Dobson (2009), it was hypothesised that the engagement group would experience greater reductions in body dissatisfaction and negative affect relative to

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<sup>1</sup> Findings from this chapter have been published in the *Journal of Consulting and Clinical Psychology* [Atkinson, M. J., & Wade, T. D. (2012). Impact of metacognitive acceptance on body dissatisfaction and negative affect: Engagement and efficacy. *Journal of Consulting and Clinical Psychology*, 80(3), 416-425]. Additionally, parts of this chapter were presented by the author at two conferences in 2011: 9<sup>th</sup> Annual Conference of the Australian and New Zealand Academy of Eating Disorders (Sydney, Australia); and as part of a symposium conducted at the 34<sup>th</sup> National Conference of the Australian Association for Cognitive and Behaviour Therapy (Sydney, Australia).

the non-engagement and control groups. The third objective was to assess the capacity of baseline body dissatisfaction, mindfulness, escape-avoidant coping, and emotion dysregulation to moderate the effects of engagement in acceptance. Given an absence of research in this area, no directional hypotheses were formulated. The final aim was to examine the variables that differentiated between those who engaged optimally and those who did not. It was hypothesised that emotion-related variables would impair engagement rather than body-related variables. Overall, addressing these aims enables a capacity to contribute to knowledge regarding the efficacy of acceptance-based interventions for disordered eating.

## **3.2 Method**

### **3.2.1 Participants**

Participants were 80 female first-year psychology students who were recruited as part of a first-year volunteer research pool in which participation earned course credit and inclusion criteria were that participants had to be female and aged 18 or over. This sample size was determined using the effect size ( $d$ ) associated with the main effect of group from Singer and Dobson (2009), whereby engagers in metacognitive acceptance experienced a greater decrease in negative mood with respect to non-engagers ( $d = 0.56$ ) as a result of a brief acceptance intervention; in addition to a reported 60% rate of engagement. Within a repeated measures design, an acceptable power of 0.80 with an alpha of 0.05 would be achieved with 21 in the non-engagement group and 31 in the engagement group (Hedeker, Gibbons, & Wateraux, 1999). Ethics approval was obtained from the Flinders Social and Behavioural Research Ethics Committee, and informed written consent was obtained from each participant before commencing the session (see Appendix A).

### **3.2.2 Design**

A 2 (group: acceptance, control) x 2 (time: post-induction, final) repeated measures experimental design was employed in order to assess the effects of metacognitive acceptance training on the dependent variables of weight satisfaction, appearance satisfaction and negative affect. The acceptance group was divided into engagers and non-engagers based on a post-hoc assessment of engagement in order to assess the impact and predictors of engagement in acceptance. Baseline assessment of the outcomes prior to a body dissatisfaction induction procedure was included for the purposes of a manipulation check. Measures of body dissatisfaction, emotion regulation, coping style and mindfulness were also taken at baseline to assess their capacity to moderate intervention effects.

### **3.2.3 Procedure**

Randomisation of participants was conducted in the week prior to data collection such that participants had an equal probability of assignment to either the control or acceptance intervention condition using a computer-generated randomising sequence (author). Participants attended a laboratory containing a single computer and were informed they would view a set of clothing advertisements. Participants first completed the baseline set of standardised measures and then underwent a body dissatisfaction induction previously described in Wade et al., (2009) whereby a set of 16 magazine advertisements of clothing modelled by young, thin women was displayed sequentially on the computer screen. Participants were instructed that they had 15 minutes with which to view and rate the set of images. In order to heighten the impact of the induction (Tiggemann & McGill, 2004), participants were encouraged to compare themselves with the models by completing the adapted Consumer Response Questionnaire (Mills, Polivy, Herman, &

Tiggemann, 2002) after viewing each image, which requires the participant to indicate their agreement (1 = strongly disagree, 5 = strongly agree) with three statements: (1) I would like my body to look like this woman's body; (2) This woman is thinner than me; (3) In a busy clothes shop, I would not like to try on bathing suits in the same room if this woman was also trying on bathing suits in the same change room.

After the induction, those allocated to the acceptance group received acceptance training in the form of a 10 minute video shown on the computer screen. The experimenter (author) answered any questions and ensured that participants understood the instructions. Participants were then given a cue card containing four statements to help remind them of how to engage in the technique, and were asked to practise it for 5 minutes. Those allocated to the no instruction control group received no training and were simply monitored throughout the practise period. Upon completion, all participants were asked to give a written account of how they responded to their thoughts and feelings during the practise period by answering the question "Please describe how you responded to the thoughts and feelings that you experienced during the last 5 minutes." Assessments of the dependent variables (negative affect and body satisfaction) were taken at three points: at baseline, after the body dissatisfaction induction (post-induction), and following the practise period (final). Participants were not informed of group membership until after the second assessment: blinding to group assignment was not possible within this design. Debriefing as to the aims of the research and any issues raised were provided at the completion of the session.

#### **3.2.4 Acceptance Intervention**

The instructions for the acceptance condition were presented in a 10-minute

video format. After being told that they would be learning a technique for responding to unpleasant experiences, the video was comprised of three components: an educational component outlining key acceptance practices, a 3-minute guided experiential exercise, and instructions for using the technique in response to media pressures regarding body image. Acceptance concepts that were conveyed included first becoming aware of and acknowledging internal experiences, allowing them to be as they are by refraining from judgement and evaluation, and finally, releasing them. Participants were encouraged to bring a sense of compassion and curiosity to the observation of their experience, and to stay with it even if it made them feel uncomfortable. A complete transcript of the video can be found in Appendix B1.

### **3.2.5 Measures**

At baseline participants completed a self-report questionnaire comprised of demographic questions (age, date of birth, height and weight), as well as the measures of outcome and moderator variables listed below. Only one person, randomised to the acceptance group, did not report height and weight.

**3.2.5.1 Outcome measures. *Body satisfaction.*** Participants reported current feelings on two dimensions of body satisfaction, namely weight and appearance, using Visual Analogue Scales. Based on Heinberg and Thompson (1995), participants were required to indicate their response to the questions ‘how satisfied do you feel about your weight right now’, and ‘how satisfied do you feel about your appearance right now’ by dragging a slider along a 100-pixel horizontal line with endpoints not at all (extreme dissatisfaction) and very much (extreme satisfaction). VAS scales have shown to be reliable indicators of change in body dissatisfaction, are quick and easy to administer, and are accurate in representing small changes due to the difficulty of recollecting previous responses (Heinberg &

Thompson, 1995; Tiggemann & McGill, 2004). In addition, the VAS measure of body dissatisfaction has been shown to correlate well with the EDI-BD (Heinberg & Thompson, 1995). If the slider was left untouched, error checks were put in place that asked the participant to “please click OK if you are happy with your responses, or click cancel to return and make changes”.

**3.2.5.1.2 Negative affect.** A momentary assessment of negative affect (NA) was assessed using the negative items of the Positive and Negative Affect Schedule – Expanded Form (PANAS-X; Watson & Clark, 1994) which consisted of 10 words describing negative emotional states (e.g., angry, guilty, nervous, upset). Although various temporal instructions are possible, for this study participants were asked to report the extent to which they are feeling this way ‘right now’ using a five-point scale from *very slightly or not at all* to *extremely*. The mean item score was used where higher scores reflected greater negative affect. Based on the original validation study, internal consistency for the NA dimension of the PANAS-X was high ( $\alpha = .85$ ). The NA scales have also demonstrated convergent and discriminant validity, being significantly correlated ( $r$  ranging from .87 to .91) with corresponding scales of the Profile of Mood States (POMS; McNair, Lorr, & Droppleman, 1971) and with less inter-correlation than the POMS, indicating an increased capacity for distinguishing affective states. In the validation sample (Watson & Clark), NA was also related to corresponding scales from the Beck Depression Inventory (BDI; Beck, Ward, Mendelson, Mock, & Erbaugh, 1961) and the Hopkins Symptom Checklist (HSCL; Derogatis, Lipman, Rickels, Uhlenhuth, & Covi, 1974), two commonly used scales for assessing mood symptomatology. Additionally, the PANAS is correlated with the Depression Anxiety and Stress Scales (DASS; Lovibond & Lovibond, 1995), particularly for the NA scale of the PANAS and the

Stress scale of the DASS (Crawford & Henry, 2003). Predictive validity of the PANAS-X for onset of bulimia symptoms has also been demonstrated (Stice et al., 2006). Internal consistency was .85 for the current study.

**3.2.5.2 Baseline dispositional measures. *Body dissatisfaction.*** The Body Dissatisfaction subscale of the Eating Disorders Inventory (EDI-BD; Garner, Olmstead, & Polivy, 1983) consists of nine items assessing dissatisfaction with various body regions. Participants were asked to indicate how often a range of statements was true of them on a 6-point scale ranging from *never* to *always*. The original scoring for eating disorder populations (0,0,0,1,2,3 from *never* to *always*) was discarded in favour of the full 6-point Likert scale as it would have produced limited descriptive information in an undergraduate sample. The mean item score was used where higher scores reflected greater dissatisfaction. The EDI has been verified as psychometrically sound, with the internal consistencies of .92 for the BD subscale. Additionally, the EDI has been shown to accurately distinguish those with eating disorders from comparison subjects, is correlated well with related measures, and subscales have been shown to be matched with clinician ratings (Garner et al.). Internal consistency for the current study was .90.

**3.2.5.2.2 *Emotion regulation.*** The Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004) involves 36 items designed to assess awareness, understanding, acceptance, and regulation of emotional experience. Participants rate the frequency with which they experience a range of statements using a 5-point scale from almost never to almost always. A total score is calculated and reflects overall difficulties, as well as scores for six separate subscales: Non-acceptance of emotional responses (*acceptance*; e.g. 'When I'm upset, I feel guilty for feeling that way'); difficulties engaging in goal directed behaviour (*goals*; e.g.

‘When I’m upset, I have difficulty concentrating’); impulse control difficulties (*impulse*; e.g. ‘When I’m upset, I lose control over my behaviors’); lack of emotional awareness (*awareness*; e.g. ‘I am attentive to my feelings’); limited access to emotion regulation strategies (*strategies*; e.g. ‘When I’m upset, I believe that I’ll end up feeling very depressed’); and lack of emotional clarity (*clarity*; e.g. ‘I have difficulty making sense out of my feelings’). Some items are reverse scored so that higher scores reflect greater difficulty. The acceptance, impulse, awareness, and clarity scales in particular reflect a mindful or acceptance response to negative emotions. The validation sample demonstrated good internal consistency, with reliability coefficients (Cronbach’s alpha) reported at .93 overall with each of the subscales above .80. Test-retest reliability was also established for a time period of 4 to 8 weeks ( $r = .88$  overall;  $r = .68 - .89$  for subscales). Additionally, the DERS was shown to be significantly correlated with experiential avoidance. The current study demonstrated good internal consistency, with reliability coefficients (Cronbach’s alpha) reported at .95 overall with each of the subscales between .83 and .93.

**3.2.5.2.3 Coping response style.** The Ways of Coping Questionnaire-Revised (WOC; Folkman, Lazarus, Dunkel-Schetter, DeLongis, & Gruen, 1986) was employed to assess thoughts and actions adopted when encountering stressful situations. Six subscales of the WOC were used: Confrontive coping, Self-controlling, Escape-Avoidance, Planful Problem-Solving, Distancing and Acceptance. Participants were asked to recall a recent upsetting or stressful experience and then rate the extent to which each of the items was adopted using a four-point scale, from *not used at all* to *used very much*. The degree to which each coping style (subscale) was used relative to others was calculated by dividing the mean for each subscale by the sum of the means for all subscales, as used previously

(Ghaderi & Scott, 2001). As the primary strategy of interest, and in line with Ghaderi and Scott (2001), only the scores on the relative use of escape-avoidance coping was used for analysis. Although measures of coping processes have struggled to obtain adequate indices of reliability, the WOC is claimed to be more satisfactory than most (Folkman & Lazarus, 1985; Ghaderi & Scott, 2001). Based on a community sample, alpha coefficients for the above scales ranged from .61 to .79, with the escape-avoidance scale reported at .72 (Folkman et al., 1986). Internal consistency for the escape-avoidance subscale for the current study was .81.

**3.2.5.2.4 Mindfulness.** Individual differences in mindfulness were assessed using the Five Facet Mindfulness Questionnaire (FFMQ; Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006) that was constructed from the findings of a factor analysis of five separate mindfulness measures. The FFMQ consists of five subscales conceptualised to measure different mindfulness constructs: Observing (e.g. ‘I notice how foods and drinks affect my thoughts, bodily sensations, and emotions’); Describing (e.g. ‘I have trouble thinking of the right words to express how I feel about things’); Acting with Awareness (e.g. ‘It seems that I am “running on automatic” without much awareness of what I’m doing’); Non-reactivity to Inner Experience (e.g. ‘In difficult situations, I can pause without immediately reacting’); and Non-judging of Inner Experience (e.g. ‘I make judgements about whether my thoughts are good or bad’). Participants rated a range of statements on the extent to which they are true of them on a five-point scale from *never or very rarely true* to *very often or always true*. Psychometric properties have been established with normative samples (Baer et al., 2006), as well as a meditative and non-meditative samples (Baer et al., 2008). The five scales have exhibited internal consistency ( $\alpha$  ranging from .75 to .91), and modest inter-correlation, indicating related but

distinguishable facets of mindfulness. In addition, the different factors were found to be correlated in the expected direction with a range of traits, psychological symptoms, and other related constructs (Baer et al., 2006). The five scales exhibited acceptable internal consistency in the current sample, with Cronbach's alphas ranging from .77 to .91, and .90 overall.

### **3.2.6 Assessment of Engagement**

Engagement in acceptance was defined as an understanding of acceptance concepts and demonstrated application of the acceptance training received (e.g., acknowledging, allowing, and releasing experience). This was ascertained by means of the written response given by participants of how they responded to their thoughts and feelings, which were then used to divide participants into two groups – engagers and non-engagers. The criterion for categorisation of engagement was that responses should reflect acceptance concepts (e.g. “I realised they were just thoughts and they come and go” and “allowed myself to feel for example bad... I accept that bad is a part of human experience and it comes and goes”), and refrain from cognitive restructuring (e.g. “tried to see them as normal...tried to realise it is not as big of a deal I made it out to be”), positive thinking (e.g. “I responded with a more positive attitude”), or reassurance language (e.g. “everything will be ok”). No constraints were placed regarding the length of written responses, which ranged from 1 to 6 sentences (48 words on average). Each response was rated for the degree of engagement using a 4-point rating scale (1 = definitely not used, 2 = probably not used, 3 = probably used, 4 = definitely used). Responses were independently coded by the author and supervisor, with an interrater reliability indicating a good level of agreement ( $r = 0.88$ , kappa = 0.78,  $p < .001$ ). Engagement was dichotomised by combining responses coded 1 and 2 into nonengagement and responses coded 3 and

4 into engagement. In the case of disagreement between raters, a conservative approach was adopted whereby these participants were classified as non-engagement.

### **3.2.7 Statistical Analyses**

All analyses were conducted using IBM SPSS, version 19 (IBM Corp., 2010). Normality distributions for each variable across time and condition were examined prior to commencing analysis according to recommendations by Tabachnick and Fidell (2013). Inverse transformations were applied to the variable of Negative Affect to account for positive skewness. With respect to the first and second aims, differences between groups on demographic and outcome variables at baseline were first assessed using one-way analysis of variance (ANOVA). A manipulation check to assess the ability of the induction procedure to successfully produce increases in body dissatisfaction and negative affect was performed using a 2 (group: acceptance, control) by 2 (time: baseline, post-induction) repeated measures ANOVA. To assess intervention effects on outcome variables, a univariate analysis of covariance (ANCOVA) at final assessment controlling for post-induction assessment and body mass index (BMI) was conducted for each outcome. Equating groups at post-induction allows for direct comparisons between groups at final assessment. Group differences were detected using post-hoc pairwise comparisons, and effect sizes calculated using Cohen's *d*, calculated using the difference in means divided by the standard deviation of the control group at baseline. For the purpose of using BMI as a covariate, the mean BMI value was substituted for the one missing case. Post-hoc analyses were conducted using ANCOVA controlling for post-induction ratings.

As was assessed in Wade et al., (2009), indicators of clinical significance

(Kraemer et al., 2003) were based on within-group effect sizes (Cohen's  $d$ ) of at least 0.80 as well as the numbers of participants judged to be "very improved", defined for this purpose as the final VAS score being at least 1  $SD$  of the baseline mean greater than the post-induction VAS. Estimations of likelihood ratios derived from Chi-square analyses where each group was compared to the control group. Further, people were judged to have stayed the same if the difference score was between 0 and the 1  $SD$  value, and to have deteriorated if this difference score was greater than 1  $SD$  of the baseline mean below 0.

For the third aim, recommendations by Kraemer, Fairburn, Wilson and Agras (2002) were followed regarding examination of moderators. Dispositional body dissatisfaction, mindfulness, emotion dysregulation, and escape-avoidant coping style were selected *a priori* as potential moderators and outcome variables were the change over time in weight satisfaction, appearance satisfaction, and negative affect. Separate hierarchical multiple regressions were conducted for each combination of moderator and outcome variable, where Step 1 contained the moderator and dummy coded group variable representing the comparison between acceptance and control (reference) groups, thereby controlling for main effects. The product term entered at step 2 represented the interaction between group and moderating variable and indicated the moderating effect. All variables were centred to reduce multicollinearity (Aiken and West, 1991).

With regard to the final aim, univariate logistic regression for each of the variables measured at baseline was conducted to ascertain which variables predicted engagement status. Multivariate analysis was then performed with a backward-selection logistic regression model removing variables at  $p > .10$  in a stepwise fashion.

### 3.3 Results

#### 3.3.1 Descriptive Statistics

One participant failed to complete sections of the post-induction and final assessments and was subsequently excluded, leaving 79 participants available for analysis (see **Figure 3.1** for participant flow). Participants were between 18 and 57 years of age ( $M = 23.59$ ,  $SD = 8.98$ ), with a median age of 20.0 years where 22% of the sample were aged over 25 years. The women had a self-reported BMI ranging between 16.02 and 36.51 ( $M = 23.47$ ,  $SD = 4.00$ ). The mean item score on the dispositional body dissatisfaction scale was 3.66 ( $SD = 1.06$ ), reflecting a response between sometimes and often with respect to experiencing body dissatisfaction. Only 11 people (14%) reported a rating of 5 or above, indicating that they usually experienced body dissatisfaction, which is likely to indicate clinical severity. The mean item score for baseline level of negative affect was 1.46 ( $SD = 0.54$ ), reflecting a response between very slightly/not at all and a little. Only 2 people (3%) experienced a rating of 3 or above, indicating a moderate level of negative affect.

As shown in **Table 3.1**, no significant differences were detected between the two randomised groups at baseline. Nevertheless, BMI was incorporated as a covariate in further analyses in order to examine the effects of acceptance independent of participants' body size and therefore remove its potentially confounding influence on the results. Moreover, BMI was required for analyses in an earlier study utilising the same experimental induction procedure (Wade, George, & Atkinson, 2009) and therefore doing the same for the current study enables a direct comparison between these studies. Pearson's correlations between all outcome and baseline variables, along with BMI, are displayed in **Table 3.2**.

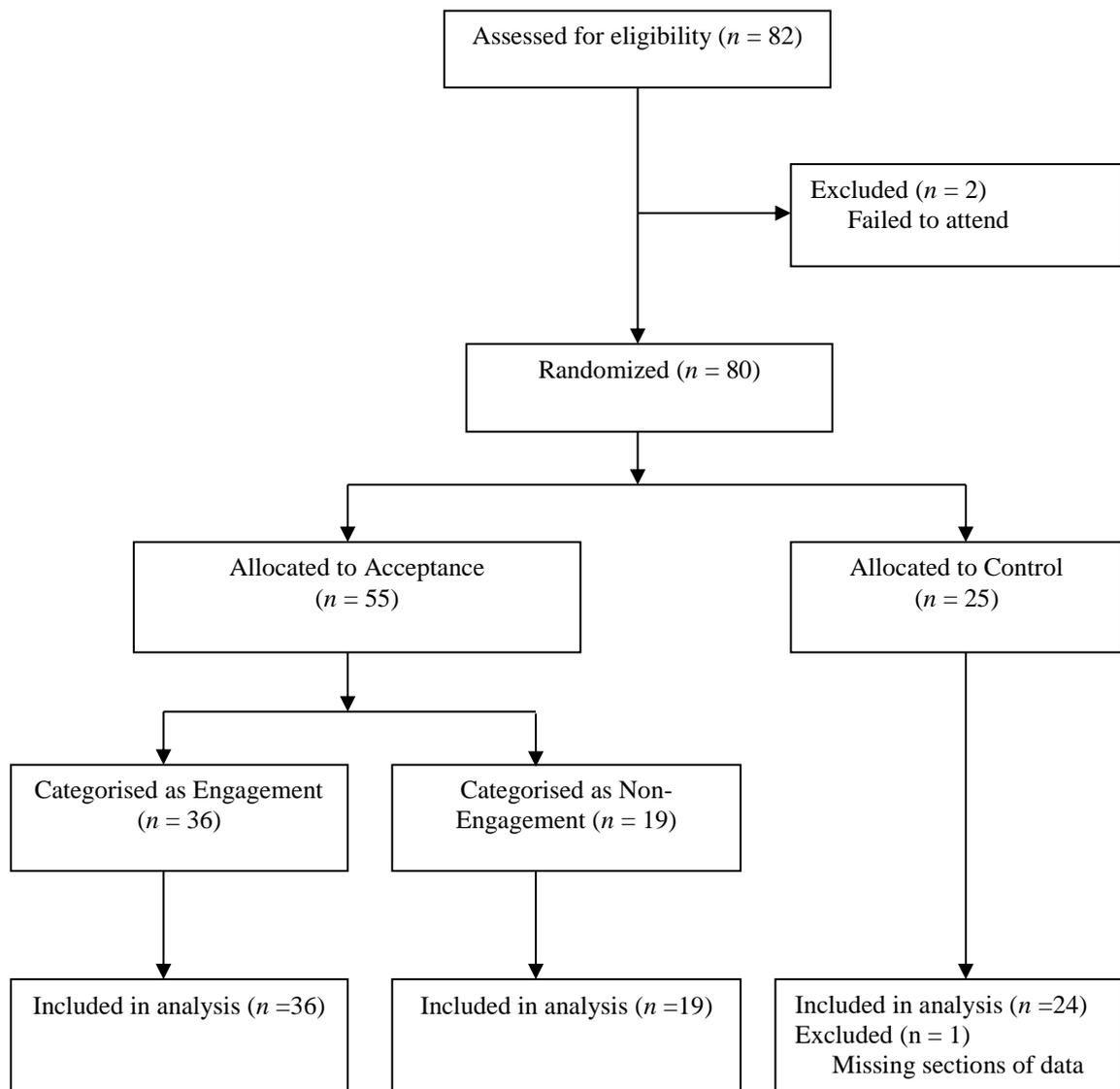


Figure 3.1. Participant flow throughout the study

Table 3.1

*Baseline Demographic, Body Dissatisfaction, and Dependent Variables for Randomised Conditions*

Variable	<i>Acceptance</i> (n = 55)		<i>Control</i> (n = 24)		<i>F</i> (1, 78)	<i>p</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
Age	23.65	9.50	23.46	7.84	0.01	.930
Body Mass Index	23.72	4.20	22.91	3.50	0.67	.415
Body dissatisfaction	3.72	1.22	3.54	1.22	0.48	.492
Weight Satisfaction	49.60	29.73	58.50	29.14	1.52	.222
Appearance Satisfaction	54.85	25.70	60.38	23.54	0.81	.371
Negative Affect	1.27	0.21	1.19	0.20	2.59	.111

Table 3.2  
*Zero-order Correlations Between All Variables for Total Sample*

<b>Variable</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>
1. BMI	-.44**	-.28*	.09	.47**	-.003	.05	.02
2. Weight satisfaction		.87**	-.16	-.72**	-.41**	.33**	-.26
3. Appearance satisfaction			-.16	-.66**	-.48**	.38**	-.27*
4. Negative Affect				.12	.57**	-.49**	.51**
5. Body dissatisfaction					.28*	-.27*	.19
6. Emotion dysregulation						-.77**	.51**
7. Mindfulness							-.50**
8. Avoidant Coping							

*Note.* BMI = Body Mass Index.

With regard to the post-hoc assessment of engagement, 66% ( $n = 36$ ) of those receiving acceptance training engaged and 34% ( $n = 19$ ) failed to engage optimally. Of the 19 participants failing to meet criteria for optimal engagement, participants were variably categorised as using cognitive reappraisal ( $n = 6$ ), positive thinking or reassurance ( $n = 4$ ), escape-avoidance ( $n = 4$ ), problem-solving ( $n = 1$ ), rumination or over-thinking ( $n = 2$ ), with 2 participants who did not engage because they felt no need to use it. While the control group included five participants who indicated they were not affected by the media images, the remainder were categorised as using cognitive reappraisal ( $n = 4$ ), suppression ( $n = 2$ ), rumination ( $n = 1$ ), problem-solving ( $n = 1$ ), with eight participants simply reporting comparative processing or negative feeling without giving further description.

### **3.3.2 Effect of Metacognitive Acceptance on Body Dissatisfaction and Negative Affect**

**3.3.2.1 Manipulation Check.** A manipulation check of the body dissatisfaction induction was performed to examine the changes in the dependent variables between baseline and post-induction. Across randomised groups (acceptance and control), the induction was successful in reducing weight satisfaction, revealed by a significant main effect of time [ $F(1,76) = 4.55, p = .036$ ], but not appearance satisfaction [ $F(1,76) = 1.59, p = .211$ ] or negative affect [ $F(1,76) = 1.73, p = .192$ ] which demonstrated no significant main effects of time. There were no other significant main effects or interactions, indicating no differences between acceptance and control groups. After the induction procedure, the three outcome variables were not significantly different across groups (weight satisfaction,  $F(1,78) = 1.17, p = .283$ ; appearance satisfaction,  $F(1,78) = 0.98, p = .326$ ; negative affect,  $F(1,78) = 2.12, p = .150$ ).

**3.3.2.2 Significance of change over time among groups.** In order to examine the capacity of acceptance training to effect change in the dependent variables from post-induction to final assessment, a univariate ANCOVA was performed at final assessment controlling for BMI and post-induction scores. Results showed a significant effect of condition for all three outcome variables: weight,  $F(1,75) = 6.41, p = .013$ ; appearance,  $F(1,75) = 5.76, p = .019$ ; and negative affect,  $F(1,75) = 7.14, p = .009$ ). Adjusted means and effect sizes for between-groups comparisons are displayed in Table 3.3, which demonstrate participants in the acceptance group to have significantly improved scores relative to the control participants at final assessment.

Table 3.3  
*Between-Groups Pairwise Comparisons and Effect Sizes (Cohen's  $d$ ) at Final Assessment Controlling for Post-Induction Assessment*

<i>Variable</i>	<i>Post-Induction Covariate</i>	<i>Control</i> ( <i>n</i> = 24)		<i>Acceptance</i> ( <i>n</i> = 55)		<i>d</i>
		<i>M<sub>adj</sub></i>	<i>SE</i>	<i>M<sub>adj</sub></i>	<i>SE</i>	
Weight Satisfaction	46.44	50.78	2.42	58.15	1.60	0.25
Appearance Satisfaction	50.66	53.70	3.11	62.68	2.05	0.38
Negative Affect (transformed)	1.21	1.19	0.03	1.11	0.02	0.41

*Note.*  $M_{adj}$  = Adjusted Mean; Cohen's  $d = |M_{T2} - M_{T1}| / SD_{control}$ , where 0.3 is small, 0.5 is medium, and  $\geq 0.8$  is large

### 3.3.3 Effect of Engagement in Metacognitive Acceptance on Outcome

#### Variables

**3.3.3.1 Significance of change over time among groups.** A univariate ANCOVA at final assessment controlling for BMI and post-induction scores was conducted in order to examine the effect of group (engagement, non-engagement, control) on the dependent variables from post-induction to final. Results demonstrated significant effects of group for weight satisfaction ( $F = 3.20, p = .047$ ), appearance satisfaction ( $F = 3.74, p = .028$ ), and negative affect ( $F = 3.66, p = .031$ ). Post-hoc between-group comparisons (**Table 3.4**) indicated significantly greater improvements for the engagement group relative to the control group for all three dependent variables. Significantly greater improvements for the non-engagement group relative to control were also found for weight satisfaction. There was no significant difference between engagement and non-engagement groups for any of the dependent variables, and no significant differences between non-engagement and control groups for appearance satisfaction and negative affect.

Table 3.4  
*Post-hoc Analysis: Between-Groups Pairwise Comparisons and Effect Sizes (Cohen's  $d$ ) at Final Assessment Controlling for Post-Induction Assessment*

			Control		Engagement	
	$M(\text{adjusted})$	$SE$	$p$	$d$	$p$	$d$
Weight Satisfaction						
Non-engagement	58.76	2.80	.036	0.27	.793	0.03
Engagement	57.84	1.99	.027	0.24		
Control	50.77	2.44				
Appearance Satisfaction						
Non-engagement	58.96	3.53	.275	0.22	.201	0.24
Engagement	64.60	2.52	.008	0.46		
Control	53.76	3.10				
Negative Affect						
Non-engagement	1.12	0.03	.077	0.33	.625	0.09
Engagement	1.10	0.02	.010	0.43		
Control	1.19	0.03				

*Note.* Post-induction covariates: Weight satisfaction = 46.44, Appearance Satisfaction = 50.66, Negative Affect = 1.21; Cohen's  $d = |M_{T2} - M_{T1}|/SD_{\text{control}}$ , where 0.3 is small, 0.5 is medium, and  $\geq 0.8$  is large

**3.3.3.2 Clinical significance.** The first indicator of clinical change (**Table 3.5**) indicates that both the engagement and non-engagement groups produced significantly more people that were judged to be very improved regarding both weight satisfaction and negative affect, when compared to the control group. Only the engagement group resulted in significantly more people being greatly improved relative to control regarding appearance satisfaction. Within-group effect sizes (Cohen's  $d$ ) of the change between post-induction and final assessments were calculated as a secondary indicator of clinical significance. The engagement group was associated with a large effect size for increase in weight satisfaction ( $d = 0.84$ ) and appearance satisfaction ( $d = 0.80$ ), and with a medium effect size for reduction of negative affect ( $d = 0.58$ ). The non-engagement group was also associated with a

large effect size for increase in weight satisfaction ( $d = 0.98$ ), but medium effect sizes for appearance satisfaction ( $d = 0.50$ ) and negative affect ( $d = 0.68$ ). Effect sizes associated with the control group indicated no change for negative affect ( $d = -0.08$ ), and small to medium effect sizes for increase in appearance satisfaction ( $d = 0.38$ ), and weight satisfaction ( $d = 0.58$ ).

Table 3.5

*Clinical Significance as Indicated by Number of People Judged to be Very Improved*

Variable	Control		Engagement				Non-Engagement			
	<i>N</i>	%	<i>N</i>	%	$\chi^2$ <i>LR</i>	<i>p</i>	<i>N</i>	%	$\chi^2$ <i>LR</i>	<i>p</i>
Weight satisfaction										
Improved	0	0	4	11	4.28	.039	3	16	5.19	.023
Stayed the same	24	100	32	89			16	84		
Deteriorated	0	0	0	0			0	0		
Appearance satisfaction										
Improved	0	0	7	19	7.76	.005	2	11	3.39	.066
Stayed the same	24	100	29	85			16	84		
Deteriorated	0	0	0	0			1	5		
Negative Affect										
Improved	0	0	6	17	6.57	.010	3	16	5.19	.023
Stayed the same	23	96	30	83			15	79		
Deteriorated	1	4	0	0			1	5		

*Note.* Very improved was scored as 1 *SD* of the pooled baseline mean higher from postinduction to final assessment (weight satisfaction = 29.65; appearance satisfaction = 25.04; negative affect = 0.54).  $\chi^2 LR$  = chi-square likelihood ratio using the control group as the comparison with respect to improvement only.

### 3.3.4 Moderators of the Effect of Engagement in Metacognitive Acceptance on the Dependent Variables

In order to determine any moderating effects of the variables measured at baseline on the relationship between metacognitive acceptance training and change in the outcome variables, a series of hierarchical multiple regression analyses were

conducted. Given the lack of a significant difference between engagement and non-engagement groups with respect to the effect on the outcome variables, it was decided to collapse the two into one acceptance group to increase our power for finding significant moderating effects. Thus the results reported here reflect the control group versus acceptance as a whole.

No significant interactions were found for weight or appearance satisfaction. For negative affect, adding the interaction term at step 2 explained a significant additional variance for difficulties with emotion regulation (4.9%,  $F\Delta(1, 75) = 4.7, p = .034$ ), mindfulness (7.8%,  $F\Delta(1, 75) = 7.42, p = .008$ ), and escape-avoidant coping (7.1%,  $F\Delta(1, 75) = 6.85, p = .011$ ), indicating that these variables all significantly moderated the effects of acceptance with regard to negative affect. As can be seen in **Figure 3.2** to **Figure 3.4**, for those who received acceptance training, there was a greater reduction in negative affect over time for those who scored higher rather than lower in difficulties with emotion regulation, and escape-avoidant coping, and for those who scored lower rather than higher in mindfulness. This is contrasted with the control group, which revealed a lesser reduction (and actually saw an increase) in negative affect over time for those who scored higher rather than lower in difficulties with emotion regulation, and escape-avoidant coping, and who scored lower rather than higher on mindfulness.

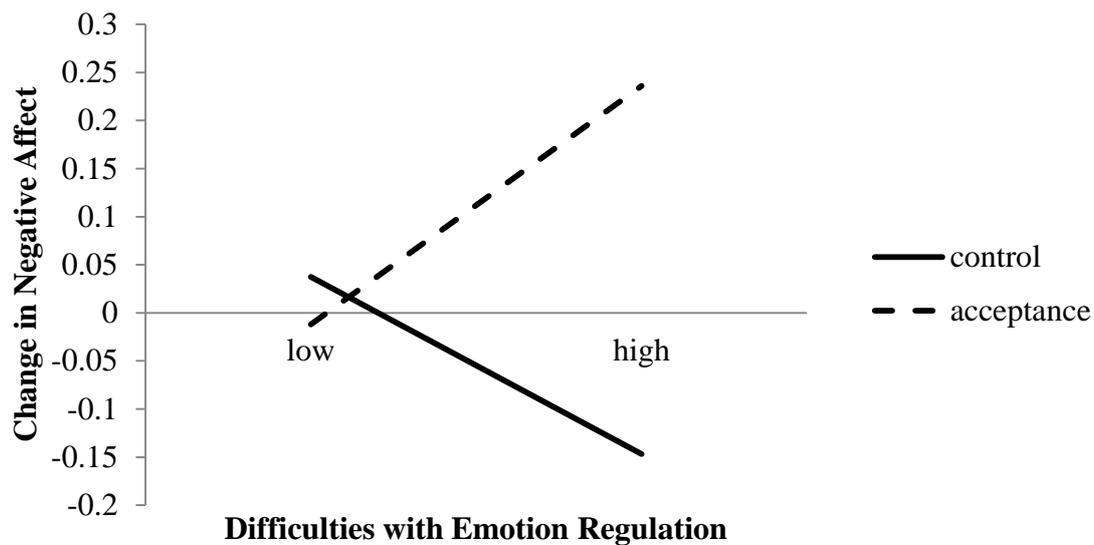


Figure 3.2. Difficulties with Emotion Regulation as a Moderator of Acceptance Training on Negative Affect

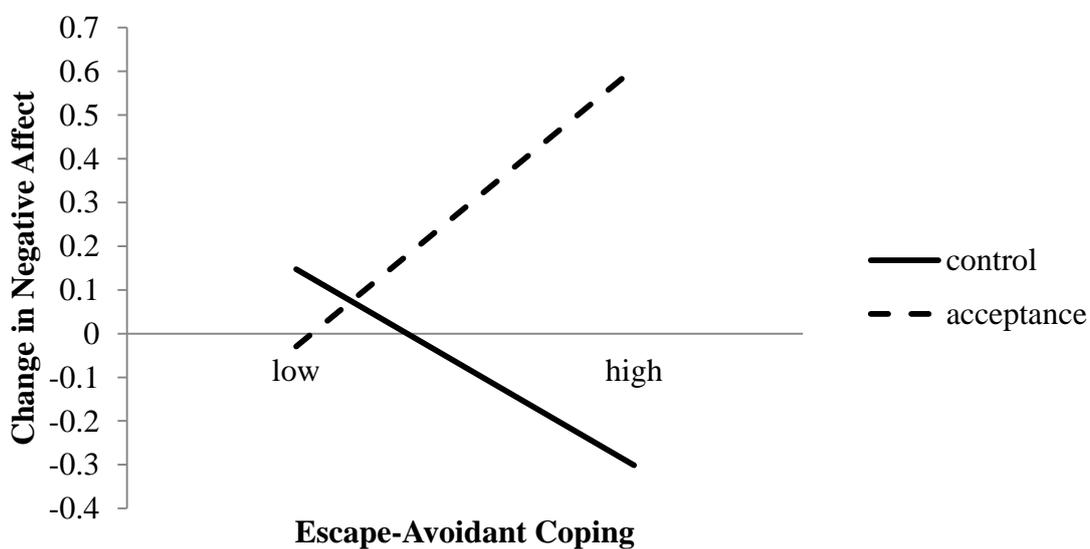


Figure 3.3. Escape-Avoidant Coping as a Moderator of Acceptance Training on Negative Affect

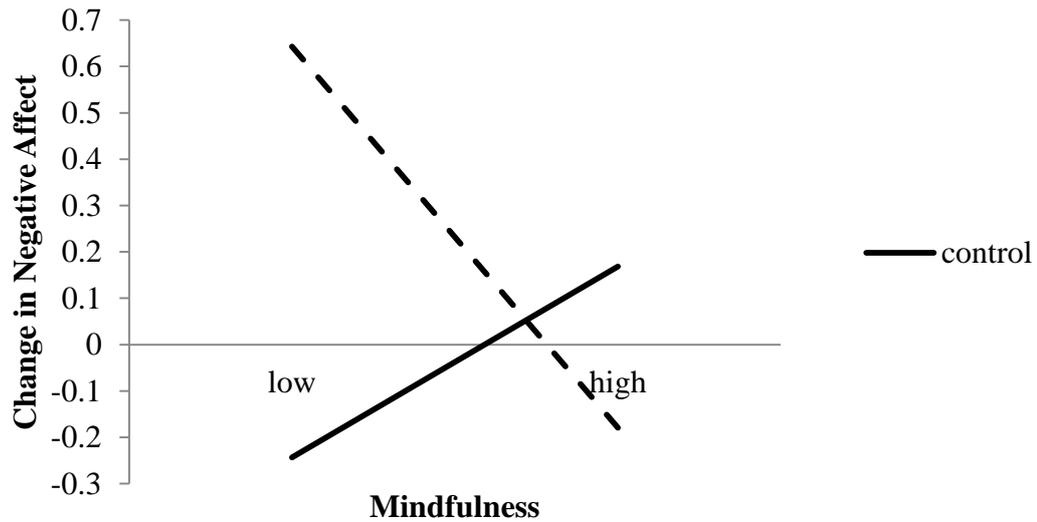


Figure 3.4. Mindfulness as a Moderator of Acceptance Training on Negative Affect

### 3.3.5 Predictors of Engagement in Metacognitive Acceptance

A series of univariate logistic regression analyses were performed to ascertain the capacity of each of the variables measured at baseline to differentiate between those who did and did not engage in the acceptance technique. Results are presented in **Table 3.6**, and show that difficulties with emotion regulation, escape-avoidant coping, and negative affect were all significantly associated with a failure to engage successfully in acceptance. All variables significant at  $p < .10$  were included in a subsequent multivariate logistic regression analysis, revealing that the model with the best predictive value, accurately predicting 76.4% of cases, contained only negative affect as a significant predictor,  $\chi^2 = 10.75, p < .001$ .

Table 3.6  
*Univariate Predictors of Nonengagement Compared to Engagement in Metacognitive Acceptance*

Measure	Nonengagement ( <i>n</i> = 19)		Engagement ( <i>n</i> = 36)		Nonengagement vs. Engagement		
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	OR	95% <i>CI</i>	<i>p</i>
<i>Baseline variables</i>							
BMI	23.71	3.57	23.72	4.55	1.00	0.59 – 1.70	.996
Body dissatisfaction	3.96	0.93	3.58	1.00	1.56	0.82 – 2.96	.175
Emotion dysregulation	2.82	0.68	2.31	0.58	2.40	1.24 – 4.64	.009
Mindfulness	2.99	0.46	3.18	0.42	0.59	0.30 – 1.16	.128
Avoidant coping	0.15	0.03	0.13	0.04	2.09	1.13 – 3.89	.019
<i>Outcome Variables</i>							
Weight satisfaction	40.68	32.12	54.31	27.69	0.62	0.34 – 1.11	.109
Appearance satisfaction	48.47	29.96	58.22	22.89	0.69	0.39 – 1.20	.183
Negative affect	1.84	0.68	1.34	0.37	2.79	1.39 – 5.59	.004

*Note.* OR = Odds Ratio; CI = confidence interval; BMI = Body Mass Index.

### 3.4 Discussion

The purpose of the current research was to further examine the utility of metacognitive acceptance in reducing body dissatisfaction and negative affect, with an emphasis on efficacy, engagement in the technique, and potential moderators of intervention effects.

The first and second objectives were to first assess the efficacy of acceptance to produce improvements in key risk factors for eating disorders, body dissatisfaction and negative affect, and then to assess the impact of engagement in the technique by comparing engagement and non-engagement groups against a control group with respect to these same outcomes. Results showed that the acceptance group produced significant improvements in weight satisfaction, appearance satisfaction, and negative affect by final assessment relative to the control group. With regard to engagement, as expected, those who engaged

successfully in acceptance experienced a significant increase in weight and appearance satisfaction and a significant decrease in negative affect over time as compared with the control group, however, contrary to our predictions, were not significantly different from the non-engagement group, associated with effect sizes < 0.24. In addition, although no difference was found between non-engagers and controls for appearance satisfaction and negative affect, the non-engagement group did experience an increase in weight satisfaction relative to control. Indicators of clinical significance reflected these results with the engagement group containing the most number of people judged to be very improved but with the non-engagement group still experiencing more people judged to be improved than control for weight satisfaction and negative affect. In addition, both engagement and non-engagement groups showed large effect sizes for within-group changes to weight satisfaction (.84 and .80, respectively), and medium effect sizes for appearance satisfaction (.80 and .50) and negative affect (.58 and .68).

These results replicate the findings of Wade et al., (2009) in providing support for the usefulness of acceptance in reducing body dissatisfaction and make a further contribution in showing the benefit of acceptance training on negative affect. This is an important finding given the role of negative affect and mood intolerance in the development and maintenance of disordered eating (Fairburn et al., 2003; Stice, 2001) and provides further empirical impetus for the use of more substantial acceptance strategies in an effort to reduce risk factors for eating disorders. It is important to note that the body dissatisfaction induction procedure failed to produce a reliable decrease in appearance satisfaction, which may account for the less robust effects for this variable. This may indicate that assessment of one's appearance is a less salient contributor to body dissatisfaction than weight satisfaction and therefore

more resistant to transitory influences. In addition, the non-engagement group responded in an unexpected way to the body dissatisfaction induction with regards to negative affect, namely, that it was reduced rather than increased as would be expected. It is possible that those not engaging optimally had negative expectations about the requirements of the study that were reduced after actually viewing the images and deciding that it wasn't as bad as they thought. Alternatively, given the finding that the non-engagement group were more likely to adopt escape-avoidant coping in the face of distress, it is also plausible that the non-engagement group were blocking their experience of negative affect and distress which resulted in a reported reduction. Regardless, it is clear that those who experience reluctance in engaging with an acceptance technique process emotionally salient stressors differently to those who do not experience the same difficulty with engaging in such techniques.

An interesting finding of the current study is that a beneficial effect of acceptance training was obtained even in the instance of a failure to adhere completely and optimally to the training instructions. This aligns with Segal, Williams, and Teasdale (2002) who noted that individuals will take the instructions and apply it in a way that works for them. However, similarly to Singer and Dobson (2009), we found that a portion of individuals not meeting criteria for acceptance appeared to be utilising reassurance and positive thinking, as well as cognitive reappraisal. There is a concern that the benefit procured from positive thinking may be temporary and not upheld in the face of continued and persistent overwhelming affect. Also, reappraisal was not strongly related to mental health in a recent meta-analysis (Aldeo, et al., 2010). Our finding is somewhat in contrast to Singer and Dobson, who did find significant differences between individuals who did and did not engage in terms of duration of negative mood. Perhaps part of this difference

may be attributed to a difference in assessing engagement. While Singer and Dobson used a “think-aloud” measure throughout the implementation of acceptance, the current study employed a post-hoc written assessment which may have resulted in a less accurate classification of engagement. As noted by Singer and Dobson, repeated training and opportunity for practice may enable the development of a more accepting attitude and underlines the importance of assessing engagement in future research examining acceptance interventions. A final consideration that should be acknowledged is that limited differences between engagers and non-engagers may have been due to intervention effects being driven by demand characteristics that would be similar in both groups, rather than acceptance *per se*. The lack of an alternative active condition precludes the ability to ascertain this.

The third aim was to assess the capacity of dispositional body dissatisfaction, emotion regulation difficulty, escape-avoidant coping and mindfulness to moderate acceptance intervention effects. Our results indicate that although no significant moderation of the effect on weight and appearance dissatisfaction was found, the latter three variables were significant moderators of the impact on negative affect. Body dissatisfaction did not have a significant moderating effect for any of the outcome variables, indicating that acceptance training does not have a differential impact depending on level of body satisfaction and may be well suited to a universal intervention program. Differences between control and acceptance groups were found for those with elevated levels of the moderators such that the benefit conferred by acceptance training, and the contrasting deterioration experienced by the control group, was amplified for those with greater emotion dysregulation and escape-avoidant coping and lower mindfulness. This finding is consistent with other research (e.g., Stice, Marti, Shaw, & O’Neil, 2008) indicating that higher-risk groups

are likely to receive the greatest benefit from interventions. The finding that higher dispositional mindfulness was associated with relatively little change in negative affect for both acceptance and control conditions may indicate that pre-existing mindfulness qualities may have acted as a protective factor against the body dissatisfaction induction. This is convergent with recent findings indicating that mindfulness may facilitate more adaptive responses to emotional stimuli in the first instance. For instance, Creswell, Way, Eisenberger, and Lieberman (2007) found increased brain activity relating to affect regulation in those with higher trait mindfulness during a negative affect labelling task. Additionally, Erisman and Roemer (2010) reported that mindfulness participants were lower on negative affect immediately after viewing an emotionally complex film clip. Our finding therefore provides support for an advantageous quality of teaching mindfulness-based acceptance, particularly within the context of an application to prevention and relapse-prevention.

The final objective was to identify potential barriers to successful engagement. Results indicated a third of participants (34%) failed to meet criteria for optimal engagement, which indicates that extended video training slightly improved engagement from the 40% failing to demonstrate acceptance reported by Singer and Dobson (2009), who used verbal instructions with cue cards, and indicates that at least part of the engagement problem may be remedied with a more extensive training approach. This is not unexpected given that mindfulness is perhaps a counter-intuitive strategy initially and has also been noted as a skill which can be improved with practice (Baer, Smith, et al., 2006). Nonetheless, the finding that less than optimal engagement was still exhibited by a group of participants underlies the importance of identifying potential barriers. As predicted, it was found that impaired

engagement in acceptance was associated with emotion-related factors of negative affect, emotion regulation difficulties and avoidant coping, rather than body-related factors such as body mass index or body dissatisfaction. Surprisingly, mindfulness was not found to be a significant predictor of engagement status. It is possible that the direct application of acceptance as a coping strategy for media influences taught in this study was sufficiently independent from trait mindfulness tendencies.

There are a number of limitations that need to be considered in the interpretation of these results. In addition to the potentially limited accuracy of our measure of engagement and lack of alternative intervention already noted, it is important to highlight that the sample used was non-clinical in nature. Although body dissatisfaction is widespread and endorsed by 14% of participants in the current study at a level indicative of clinical severity, it nevertheless remains to be seen whether these results are maintained in a larger sample experiencing severe body-related concerns. Thus, the efficacy of acceptance techniques in body dissatisfied populations such as those used in prevention studies (Stice, Shaw, Burton, & Wade, 2006; Taylor, et al., 2006) is unknown. As pointed out in Wade et al., (2009), research using a more comprehensive acceptance-based intervention approach and employing a longer-term follow up needs to be undertaken before drawing conclusions about the efficacy of acceptance for reducing risk for disordered eating. This is of particular relevance to the identification of any differences between the engagers and the non-engagers in the acceptance condition, where short-term differences are not apparent but may emerge over longer-term follow-up. A further limitation is the reliance on self-report data to determine change in outcomes, which introduces potential bias via demand characteristics. This introduces the possibility that the limited differences between engagers and non-engagers on outcomes may

simply have been due to demand effects. It must also be recognised that the study is slightly underpowered when considering the use of ANCOVA in the analyses, and thus a larger sample size in future studies would be beneficial. Finally, although it was aimed to assess what strategies the control group were adopting, the ambiguous nature of the responses limit our ability to ascertain any overlap with the acceptance condition and other strategies likely to be effective. Future research will benefit from a refined approach to assessing treatment fidelity.

In conclusion, these results indicate that impairments to optimal engagement in metacognitive acceptance are associated with increased negative affect, emotion regulation difficulties and avoidant coping, that a lack of comprehensive engagement does not necessarily preclude intervention gains, and that an ‘at-risk’ group for emotion related difficulty is most likely to experience benefit from an acceptance technique. These are important findings for with respect to eating disorders prevention given the role of negative affect and mood intolerance in the development and maintenance of eating disorders. As such, the next step in the current research was a consideration of these findings in the development of an extended mindfulness-based program for eating disorder prevention.

## Chapter 4.

### **A Randomised Controlled Trial of Mindfulness versus Dissonance-based Prevention of Eating Disorders in Young Adult Females<sup>2</sup>**

#### **4.1 Overview**

Based on the findings of previous work showing promise for an acceptance-based strategy for reducing eating disorder risk factors (Chapter 3; Wade, George, & Atkinson, 2009), the following chapter outlines the development of an extended mindfulness-based program and its efficacy with respect to reducing disordered eating and their associated risk factors in a sample of young women with body image concerns. The development of the intervention was guided by a number of key factors. First, it aimed to teach key mindfulness concepts outlined in Chapter 2 in order to foster metacognitive awareness and acceptance of body-related experiences. This included discussions and guided experiential exercises to facilitate present-moment awareness and acknowledgement of thoughts and feelings related to the body, recognition that these experiences are simply mental events and common to many, and cultivation of a non-judgmental attitude towards one's experiences.

Second, based on the findings of Chapter 3 showing that those with an avoidant coping style and emotion-related difficulties were more likely to show limited engagement, the program commenced with a discussion regarding internal experiences (e.g., thoughts, feelings, behavioural urges) common to body image disturbance and the costs of common coping strategies such as avoidance and rumination.

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<sup>2</sup> Findings from this chapter have been published in *Early Interventions in Psychiatry* [Atkinson, M. J., & Wade, T. D. (2014). Does mindfulness have potential in eating disorders prevention? A preliminary controlled trial with young adult women. *Early Interventions in Psychiatry*. Advance online publication. DOI: 10.1111/eip.12160]. Additionally, findings were presented by the author as part of a symposium conducted at the 36<sup>th</sup> National Conference of the Australian Association for Cognitive and Behaviour Therapy (Adelaide, Australia) in 2013.

Third, in order to enable a direct comparison with Stice et al.'s original DBI protocol (Stice et al., 2001; Stice et al., 2006; Stice, Trost, et al., 2003), the intervention was designed to be equivalent with respect to non-specific factors where appropriate. Accordingly, the program involved three 1-hr group sessions, minimised didactic presentation as much as possible, encouraged group interaction to foster cohesion, and contained homework exercises for between sessions.

This mindfulness-based intervention was compared to an active comparison intervention, the original DBI, and an assessment-only control, with respect to reducing key eating disorder risk factors, symptoms, and associated psychosocial impairment. This was conducted with young adult females experiencing body image concerns given their high risk for disordered eating (Striegel-Moore & Bulik, 2007). It was expected that participants in both interventions would demonstrate greater benefit relative to the control condition across all outcomes.

## 4.2 Method

### 4.2.1 Participants

Participants were 44 females with body image concerns, aged 17 to 31 ( $M = 20.57$ ,  $SD = 3.22$ ) with a self-reported body mass index (BMI) ranging from 17.72 to 40.00 ( $M = 24.83$ ,  $SD = 5.58$ ). The majority were Caucasian (93%), with three participants (7%) identifying as Asian. As an indicator of socioeconomic status (SES), highest level of parental education was 16% secondary school; 43% trade, certificate or diploma; 30% bachelor degree, and 7% postgraduate qualification.

All participants were self-selected and deemed eligible if they were at risk for, but not meeting criteria for an eating disorder diagnosis based on the *Diagnostic and Statistical Manual of Mental Disorders* (4th ed., text rev.; DSM-IV-TR; American Psychiatric Association, 2000) using the diagnostic items from the Eating

Disorder Examination-Questionnaire (EDE-Q; Fairburn & Beglin, 1994).

Assessment of risk was based on the presence of elevated body concern and was determined in accordance with Taylor et al. (2006) using the 5-item Weight Concerns Scale (WCS; Killen et al., 1994), where inclusion was designated by a total score of 50 or greater, being at least moderately afraid of gaining 1 kilogram, or rating weight as the most important thing in their life. This approach was successful in obtaining a high-risk sample suitable for selective prevention, demonstrated by a mean weight and shape concerns (EDE-Q) reflecting clinical severity ( $M = 4.13$ ,  $SD = 1.27$ ).

#### **4.2.2 Procedure**

Participants were recruited from South Australian universities and the community from February 2011 to September 2012 using flyers, posters, and class announcements inviting young women who wanted to feel better about their bodies to participate in a research study comparing two group interventions for improving body image. Some participants (24%) were recruited as part of a first-year psychology research pool where course credit was received for participation.

All individuals completed a screening interview via telephone. If eligible, participants received an email containing a link to the research study website where they gave online informed consent, provided demographic data and were randomised to one of the three conditions via an electronic dynamic block randomisation sequence. Participants randomised to the control condition completed the baseline assessment immediately. Participants randomised to an intervention were informed they would be contacted when an intervention group became available and did not complete baseline until the week prior to their first group session. This was done in order to ensure assessments were completed at a similar point in the procedure across interventions and control. However, an unexpected delay between randomisation and

group commencement due to slow recruitment resulted in the withdrawal of six

intervention participants before completion of baseline assessment (see **Figure 4.1**).

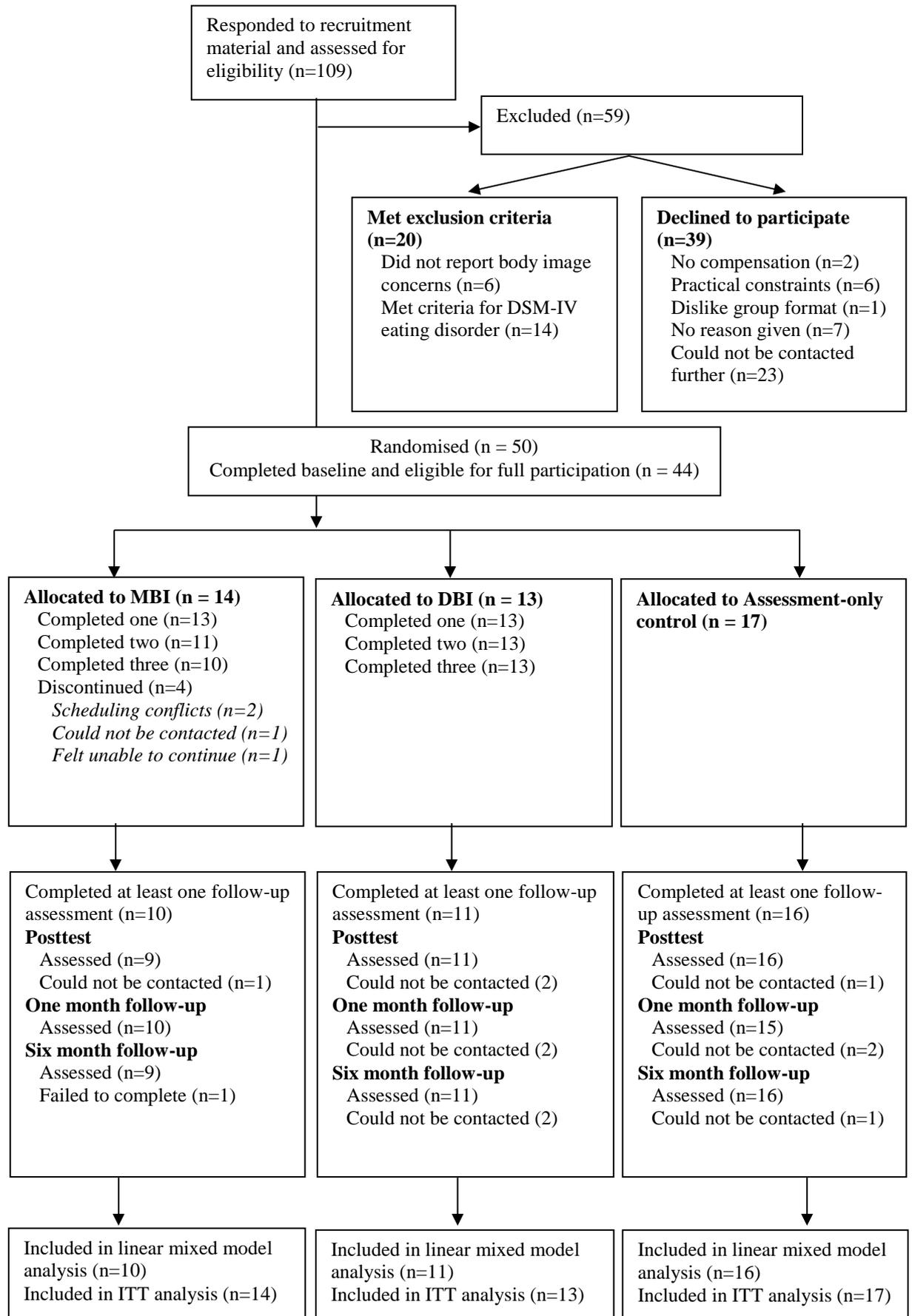


Figure 4.1. Participant flowchart.

Intervention participants attended three weekly 1-hour group sessions with 2-4 members, conducted on campus, and facilitated by a clinical postgraduate student (author) with the use of scripted manuals outlining the intervention protocol. In addition to baseline, assessment data was collected from participants at post-intervention, 1- and 6-month follow-up. Control participants completed assessments and received a booklet containing the material from both interventions upon completion of the study. Other than the course credit for individuals recruited from the first-year research pool, participants received no compensation. Ethics approval was obtained from the Flinders Social and Behavioural Research Ethics Committee.

#### **4.2.3 Interventions**

The DBI was constructed based on '*The Body Project*' protocol outlined in Stice et al. (2006) and the published facilitator guide (Stice & Presnell, 2007). The mindfulness-based intervention was a relatively brief application of key aspects of mindfulness and acceptance-based practice specifically to the area of body image, with some exercises adapted from Mindfulness-Based Cognitive Therapy for depression (MBCT; Segal, Williams, & Teasdale, 2002). Both programs adhered to the principles of minimising didactic presentation, involving in-session and homework exercises, and utilising group activities. A description of all elements is contained in **Table 4.1**, and the full protocols can be found in Appendix B2.

Table 4.1

*Intervention Features*

<b>Session</b>	<b>Program content</b>
<i>Dissonance-based Intervention</i>	
Session 1:	Participants were informed that the program was based on the idea that understanding cultural pressures to be thin and how to respond to them has been shown to improve body satisfaction. A guided discussion ensued whereby participants defined the thin-ideal, considered the origins, how it is perpetuated, who benefited from the ideal, and the impact of these messages.
Homework:	<ul style="list-style-type: none"> <li>• Write a letter to an adolescent girl struggling with body image concerns about the costs of pursuing the ideal</li> <li>• Engage in a self-affirmation task of recording positive aspects about themselves (physical, behavioural, and emotional) while viewing their reflection in a full-length mirror.</li> </ul>
Session 2:	Participants were engaged in a review of the previous session and then the homework tasks: first, reflecting on their experience of writing the homework letter and reiterating the costs identified, and second, sharing positive aspects identified while completing the self-affirmation task and discussing the associated thoughts and feelings. Participants engaged in counter-attitudinal role-plays where they were asked to dissuade the facilitator, who had adopted a pro thin-ideal role such as a dieter or extreme exerciser, from pursuing the thin ideal.
Homework:	<ul style="list-style-type: none"> <li>• Generate verbal challenges for three personal examples where they had encountered pressures to be thin</li> <li>• Produce a top-10 list of things young women can do to resist the thin-ideal (e.g., what they can say, do, learn, or avoid to combat the ideal)</li> </ul>
Session 3:	Personal examples of pressures to be thin were shared, along with the verbal challenges that had been generated. Participants role-played generating quick comebacks to counter thin ideal statements. The subtle nature of pressures to be thin and the obstacles to resistance were discussed and how these could be overcome. Participants were encouraged to share their personal body-related concerns, and were guided to develop behavioural challenges for homework (e.g., wearing shorts if they were previously afraid to do so). Discussion moved to sharing ideas from the top-10 list generated for homework, characterised as 'body activism,' and selecting one of the items from their list to carry out over the coming week. Participants discussed the future pressures they were likely to face and how they could use what they had learned to respond in an effective way.
Homework:	<ul style="list-style-type: none"> <li>• Complete behavioural challenge</li> <li>• Complete body activism task</li> </ul> <p>(Participants were asked to email their homework tasks upon completion)</p>

Table 4.1 (continued)

*Intervention Features*

<i>Mindfulness-based Intervention</i>	
Session 1:	The program commenced with the idea that being aware and non-judgemental of internal experiences can reduce the impact of unwanted body-related thoughts and feelings. Participants identified internal experiences relating to their bodies and common coping strategies. Thought suppression and magnification exercises were used to demonstrate the effects of avoidance and rumination. Participants were guided through the Raisin Exercise, a commonly used exercise for maintaining present-moment awareness, and a guided experiential exercise for noting and observing experiences using the breath as anchor.
Homework:	<ul style="list-style-type: none"> <li>• Identify personal coping strategies and associated costs</li> <li>• Daily scheduled practise of the 3-minute breathing space (3MBS)</li> <li>• Practicing awareness and acceptance while undertaking a routine task.</li> </ul>
Session 2:	Barriers to practicing mindfulness were discussed and helpful hint cards were distributed. Participants were introduced to the idea that thoughts and feelings are just mental events that come and go. Participants were guided in a de-centring exercise where they took a thought of the form “I am X” and transformed it to “ <i>I am having the thought that... I am X.</i> ” Participants practised this distancing approach with an idealised magazine image. Role-plays were used whereby participants practised reflecting an accepting attitude in response to self-critical body-related statements. An experiential exercise guided participants in acknowledging and accepting cognitions specifically related to a personal unpleasant body experience.
Homework:	<ul style="list-style-type: none"> <li>• Continue practise of the 3MBS, particularly in response to distressing body-related cognitions</li> <li>• Engage in present-moment awareness and acceptance while undertaking a useful or pleasant body experience</li> <li>• Read “The Guest House” poem by Jelaluddin Rumi.</li> </ul>
Session 3:	The Guest House poem was discussed, as well as how one could be welcoming of all internal experiences, particularly those considered to be negative. The downsides to body-related judgement and self-criticism were discussed, and suggestions for an acceptance-based response were brainstormed. A guided experiential exercise asked participants to practise a non-judgemental and accepting stance while visualising a scenario in which they commonly experienced body-related concern. Participants discussed future events likely to exacerbate body image concerns and how they could use what they had learned in the program effectively.
Homework:	<ul style="list-style-type: none"> <li>• Continue practise of the 3MBS</li> <li>• Generate a Top-5 list of acceptance statements to use when they observed self-critical thoughts</li> <li>• Practise awareness and acceptance while viewing their reflection in a full-length mirror.</li> </ul> <p>(Participants were asked to email their homework tasks upon completion)</p>

#### 4.2.4 Measures

At baseline, participants completed demographic questions regarding age, height and weight, ethnicity, and parental education. Body Mass Index (BMI) was calculated from height and weight data ( $\text{kg}/\text{m}^2$ ) and was used as a covariate in the intervention analysis. Primary outcomes were selected on the basis of being the most consistently replicated and robust predictors of disordered eating (Jacobi & Fittig, 2010), with all other outcomes considered secondary.

**4.2.4.1 Primary outcome variables. *Weight and shape concern.*** Concern over weight and shape was assessed using the EDE-Q (Fairburn & Beglin, 1994), a self-report version of the Eating Disorder Examination (EDE; Cooper & Fairburn, 1987). Each item assessed the frequency of various features of eating disorder psychopathology over the previous 28 days on a 7-point scale (*no days to every day*). The Shape concern (8 items) and Weight concern (5 items) subscales were combined and a mean item calculated, with higher scores reflecting greater concerns. A number of studies have now reported on the reliability of the EDE-Q, with a recent review indicating good psychometric properties and consistency with the interview based EDE (Berg, Peterson, Frazier, & Crow, 2012). Berg and colleagues report acceptable internal consistency for the weight and shape subscales (Cronbach's alpha ranging from .70 to .93) and test-retest reliability over a two-week period ( $r$ 's of .92 and .94 in a sample of female undergraduates). In the current study, internal consistency was .90.

**4.2.4.1.2 *Negative Affect.*** Assessment of negative affect was assessed using the Sadness, Guilt, and Fear/Anxiety subscales of the Positive and Negative Affect Schedule-Expanded (PANAS-X; Watson & Clark, 1994), as used in Stice et al. (2006). This consisted of 17 words describing negative emotional states (e.g., angry, guilty, nervous, upset). Participants reported the extent to which they had been

feeling this way during the past week using a five-point scale (*very slightly or not at all to extremely*). The mean item score was used where higher scores reflected greater negative affect. Internal consistency and temporal validity of the PANAS-X have been demonstrated (Becker et al., 2010; Stice, Trost, et al., 2003; Watson & Clark, 1994) and predictive validity for the onset of bulimia symptoms has also been shown (Stice et al., 2006). Internal consistency was .95 for the current study.

**4.2.4.2 Secondary outcome variables. *Eating disorder symptoms.*** The diagnostic items from the EDE-Q (Fairburn & Beglin, 1994) assess the frequency of eating disorder symptoms present over the previous 28 days. Nine diagnostic items were used, assessing behavioural features of binge episodes, fasting, and extreme weight control practices (e.g. purging, laxative use, extreme exercise), as well as cognitive aspects of overevaluation of weight and shape, and fear of weight gain. Items were standardised to account for different response formats, and summed together to form an overall symptom composite. A mean was calculated with higher scores representing greater symptoms of disordered eating. This composite showed good internal reliability in this study ( $\alpha = .82$ ).

**4.2.4.2.2 *Psychosocial impairment.*** The Clinical Impairment Assessment (CIA; Bohn et al., 2008) is a 16-item self-report measure of the psychosocial impairment due to core eating disorder pathology. Items are rated on a four-point Likert scale (*not at all to a lot*) and reflect the extent to which eating habits, exercising, or feelings about eating, shape or weight have had an impact on aspect of personal, social and cognitive psychosocial functioning in the past 28 days. The CIA has demonstrated adequate reliability and validity within a clinical sample of patients with eating disorders (Bohn et al.) and has also been validated with a non-clinical university population where it showed excellent internal consistency ( $\alpha = .94$ ), and 1-week test-retest reliability ( $r = .94$ ; Reas, Rø, Kapstad, & Lask, 2010). Internal

reliability in the current study was .95.

**4.2.4.2.3 Dietary restraint.** The Dutch Eating Behaviour Questionnaire - Restraint (DEBQ-R; Van Strien, Frijters, Bergers, & Defares, 1986) consists of 10 items whereby participants are required to use a 5-point scale ranging from *never* to *always* to assess the frequency of a range of dieting behaviours. A higher mean score reflects greater dietary restraint. Internal consistency has been demonstrated (Cronbach's alpha of .95), along with 2-week test-retest reliability ( $r = .92$ ; Allison, Kalinsky, & Gorman, 1992), convergent validity with self-reported caloric intake, and predictive validity for bulimic symptom onset (Van Strien et al., 1986). Internal reliability for the current study was excellent ( $\alpha = .94$ ).

**4.2.4.2.4 Thin-ideal internalisation and sociocultural pressures.** The Sociocultural Attitudes Towards Appearance Scale (SATAQ-3; Thompson, van den Berg, Roehrig, Guarda, & Heinberg, 2004) is a 30-item measure of the level of internalisation of cultural body ideals. Only two of the five subscales were used: *Internalisation – General*, 9 items (e.g., “I compare my body to the bodies of TV and movie stars”) and *Pressures*, 7 items (e.g., “I've felt pressure from TV or magazines to lose weight”). Participants rate their responses on 5-point scales where responses range from *definitely disagree* to *definitely agree*, with higher scores indicating a higher level of internalisation. Internal consistency was very high, with reliability coefficient of .93 for both scales.

**4.2.4.2.5 Emotion regulation and coping response style.** Measures used for the assessment of difficulties with emotion regulation and avoidant coping have previously been described in Chapter 3. These include the DERS (current sample  $\alpha = .93$ ), and the WOC-EA (current sample  $\alpha = .73$ ).

**4.2.4.3 Intervention Validity.** The Five Facet Mindfulness Questionnaire (FFMQ; Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006) was used to assess

whether participants receiving the mindfulness intervention experienced an increase in mindful acceptance and awareness as intended. The FFMQ has been described in Chapter 3, and evidenced good internal consistency in the current sample ( $\alpha = .90$ ).

**4.2.5.1 Intervention Fidelity.** To assess fidelity to the written facilitator guides, four audiotaped sessions from each condition were independently rated by two clinical postgraduates. Raters used 10-point scales based on previous dissonance work (McMillan et al., 2011; Stice, Rohde, et al., 2009) to determine the degree of adherence to the intervention protocol (no adherence; the section was skipped to all material in the section was presented as written) and facilitator competence (poor to superior) for each of the major components of each condition.

**4.2.6.1 Motivation and Readiness to Change.** A number of factors were assessed in order to account for any impact of baseline motivation on intervention outcomes. Visual analogue scales (VAS) were used whereby participants indicated their response by dragging a slider along a 100-pixel horizontal line with endpoints *not at all* to *very much*. Four questions were asked: ‘How tired are you of feeling badly about your body image?’, ‘How motivated are you to improve your body image?’, ‘How ready are you to make changes to improve your body image?’, and ‘How successful do you feel you will be in improving your body image?’

**4.2.6.2 Program Acceptability.** At post-intervention, feedback regarding program acceptability was assessed by having intervention participants rate the program they received using separate 5-point scales (*not at all* to *very much*) with regard to enjoyment, understanding of concepts, ease of use, effectiveness, and likelihood of continued use. Participants were also asked to give free report responses regarding aspects they found most useful and what they liked and disliked about the program. At all follow-up assessments, intervention participants were asked to give an indication of how much time they had spent using the techniques

learned and any reasons for not using the techniques.

#### **4.2.7 Statistical Analyses**

All analyses were again conducted using IBM SPSS, version 19 (IBM Corp., 2010). Normality distributions and univariate outliers for each outcome variable across time by condition were examined prior to commencing analysis according to recommendations by Tabachnick and Fidell (2013). A square root transformation was applied to the eating disorder symptom composite, and a log transformation applied to negative affect to account for positive skewness. Baseline differences between conditions were assessed using univariate analysis of variance (ANOVA) for each outcome variable. Differences between the two interventions for each aspect of program acceptability, and time spent using the techniques, were assessed using independent sample t-tests.

Repeated measures intervention effects for each outcome variable were assessed using linear mixed models. Mixed models are robust with respect to missing data, unbalanced groups, varying time points common in repeated measures designs (Field, 2013), and are the recommended technique for analysing repeated-measures designs (Gueorguieva & Krystal, 2004). Importantly, mixed models retain all participants in the model regardless of missing data they may have across follow-up assessments, via the use of Maximum Likelihood estimation. For the current study, main effects and interactions were assessed using BMI and baseline observations as covariates to ensure that differences found between conditions were reflective of changes occurring across post-intervention and follow-up, and not due to baseline variability. This approach effectively equalises conditions at baseline and consequently allows for direct comparison between conditions at each follow-up point. In this context, both main effects of condition as well as interactions between condition and time are indicators of intervention effects. This resulted in a 3

(condition: mindfulness, dissonance, control) X 3 (time: post-intervention, 1-month follow-up, 6-month follow-up) mixed model for each outcome variable, with random effects across subjects included to account for individual variation. This approach excludes participants who do not complete at least one follow-up assessment (i.e., those who complete baseline only). Therefore, supplementary analysis was undertaken to also assess a full intention-to-treat (ITT) approach, by repeating the mixed models for each outcome with the inclusion of baseline assessment as the first time point in order to retain all participants. Missing data for individual variables at baseline (1-4% across variables) for the purposes of using as a covariate was imputed using the Expectation-Maximization algorithm in SPSS.

For all mixed models, post-hoc analyses were conducted to assess the differential impact of condition on outcome variables at each follow-up time point, with pairwise comparisons indicating specific group differences. Effect sizes for between-group pairwise comparisons were calculated using the difference in means between conditions divided by the pooled standard deviation ( $SD_p$ ), where  $SD_p = \sqrt{(n_1 - 1)SD_1^2 + (n_2 - 1)SD_2^2 / n_1 + n_2 - 2}$ . A correction for bias was applied to account for small sample size, as recommended by Hedges and Olkin (1985). Thus involved multiplying  $d$  by  $1 - 3/(4(n_1 + n_2) - 9)$ .

Clinical significance of change was reflected by large within-group effect sizes ( $\geq .8$ ), as well as significant changes using reliable change indices. Within-group effect sizes were calculated using Cohen's  $d$ , where the difference in means between the two time points was divided by the pooled standard deviation of all conditions at baseline, adjusted for sample size. Reliable change indices were calculated using the formula  $RCI = M_2 - M_1 / \sqrt{2(SD\sqrt{(1-r)})^2}$  where  $SD$  is the standard deviation at baseline and  $r$  is the test-retest reliability of the outcome measure in the current sample. RCIs exceeding 1.96 were deemed to indicate statistically reliable

change with 95% confidence. Estimations of likelihood ratios derived from Chi-square analyses assessed the number of people demonstrating reliable improvement in the intervention groups relative to the control group. Due to the small cell sizes, Fisher's exact test was used to determine significance at the  $\alpha < .05$  level.

### 4.3 Results

#### 4.3.1 Preliminary analysis

**4.3.1.1 Attendance and adherence.** With regard to program participation, all DBI participants (100%) participated in all three sessions with one participant who received the second session via telephone in lieu of an absence. Among MBI participants, 13 (93%) participated in session 1, 11 (79%) participated in session 2, and 10 (71%) participated in session 3. More participants in the MBI condition received individual or telephone sessions in order to cover absences or due to withdrawal from other participants (Session 1,  $n = 1$ , 7%; Session 2,  $n = 2$ , 30%; Session 3,  $n = 5$ , 36%). Additionally, a greater number of people completed the homework tasks in the DBI (Session 1, 100%; Session 2, 92%; Session 3, 69%) compared to MBI (Session 1, 71%; Session 2, 71%; Session 3, 36%). Participants in both interventions may have completed homework for Session 3 but failed to email a summary to the facilitator, thus contributing to the lower completion rates for the final session.

**4.3.1.2 Baseline data.** As the baseline assessment was included as a covariate for analysis of intervention effects, any participants who withdrew prior to the post-intervention assessment and therefore only gave baseline data were unable to be included in further analysis ( $n = 7$ ). A comparison between those excluded and those retained was undertaken using independent samples t-tests and indicated no significant differences between the two groups on any of the outcome variables, BMI

or motivation, with the exception of a significantly lower score on readiness to make changes to improve body image (i.e., ‘how ready are you to make changes to improve your body image?’) for the excluded baseline-only group, which may be a potential contributing factor to their early withdrawal. For those included in the intervention analysis, differences between conditions on baseline levels of the outcome or risk factor variables did not reflect statistical significance. However, there were medium to large effect sizes for psychosocial impairment,  $F(2, 35) = 2.63$ ,  $p = .087$ ,  $d = .78$ , dietary restraint,  $F(2, 36) = 2.04$ ,  $p = .146$ ,  $d = .67$ , and thin-ideal internalisation,  $F(2, 34) = 2.21$ ,  $p = .126$ ,  $d = .72$ , with post-hoc comparisons suggesting the MBI group was experiencing greater difficulty in these areas at baseline. Thus it is likely that the small sample size resulted in the failure to detect differences and therefore validates the use of baseline covariates for all intervention analyses.

**4.3.1.3 Intervention fidelity.** Inter-rater reliability was assessed using a two-way mixed, consistency, average-measures, intra-class coefficient (ICC) to assess the agreement between ratings. Given the small sample of recordings, adequate reliability was found for both DBI (ICC[2,2] = .68), and MBI (ICC[2,2] = .66). Overall results suggested that adherence to the protocol was high in both conditions (DBI,  $M = 8.32$ ,  $SD = 1.6$ ; MBI,  $M = 8.38$ ,  $SD = 1.13$ ), with only one item in the DBI condition (regarding the letter review in Session 2) reflecting minimal adherence (defined as a rating of less than 4). Additionally, no elements of the opposing condition were detected by the raters for either DBI or MBI conditions. Facilitator competence was also high (DBI,  $M = 8.55$ ,  $SD = 1.16$ ; MBI,  $M = 8.64$ ,  $SD = 0.75$ ), with no items reflecting “fair/below average” competence (defined as a rating of 4 or less). These ratings compare favourably with previous studies (McMillan, et al.; Stice, et al.).

**4.3.1.4 Intervention validity.** In order to ascertain that the MBI condition was operating according to theory by increasing non-judgemental awareness and acceptance, changes in the mindfulness measure were examined. Thus, a linear mixed model analysis was conducted to assess the differential impact of the conditions on mindfulness. Results showed a significant overall main effect of condition,  $F(2,30.99) = 5.76, p = .007$ , with post-hoc comparisons revealing the MBI condition to have higher mindfulness than DBI or control at post-intervention ( $d = 1.66$  and  $d = 1.36$ , respectively), 1-month follow-up ( $d = .84$  and  $d = .74$ ), and 6-month follow-up ( $d = .49$  and  $d = .86$ ). Moderate to large within-group effect sizes for the MBI intervention from baseline to post-intervention ( $d = 1.05$ ), 1-month follow-up ( $d = .61$ ), and 6-month follow-up ( $d = .96$ ) also indicate that those receiving the intervention did experience improvements with respect to mindfulness. Overall these indicators suggest that the mechanism of change for the MBI was an increase in mindfulness, which did not occur in the DBI.

#### **4.3.2 Intervention effects for outcome variables**

**Table 4.2** displays means and standard deviations by condition at each assessment time point, along with main effects and interactions. As can be seen, results showed no significant main effects of time or condition on any outcome measure. Significant time by condition interactions were found for weight and shape concerns and thin-ideal internalisation.

Post-hoc pairwise contrasts were conducted to detect specific differences between conditions at each follow-up assessment. Given the reliance of significance testing on sample size, it is important to consider effect sizes when interpreting these results, which are displayed with associated 95% confidence intervals in **Table 4.3**. As can be seen, MBI showed meaningful improvements relative to control at post-intervention on one of the primary outcome measures, weight and shape concern, as

well as on measures of dietary restraint, thin-ideal internalisation, eating disorder symptoms and psychosocial impairment. Additionally, the MBI produced moderate, but less reliable, impacts on our other primary outcome measure, negative affect, as well as on emotion regulation difficulties. In general, these post-intervention gains for MBI diminished over time; however, dietary restraint remained significantly lower than control at 1-month follow-up, and effects on negative affect and emotion regulation difficulties showed weaker evidence for maintenance at 6-month follow-up. In addition to advantages over control participants, the MBI also produced greater improvements in thin-ideal internalisation and emotion regulation difficulties compared to the DBI group at post-intervention, although these differences were not evident over follow-up.

The DBI condition showed no significant improvements relative to the control condition at any assessment time point; however, moderate to large effects were evident for improvements in dietary restraint and eating disorder symptoms at post-intervention. Again, these effects were not maintained over time, although dietary restraint did remain lower than control at final 6-month follow-up. Although not evident at earlier time points, DBI participants also showed greater improvements in escape-avoidance coping than control participants at 6-month follow-up.

**4.3.2.1 Supplementary intention-to-treat (ITT) analysis.** Results for mixed models conducted with the inclusion of baseline (and therefore retaining all participants) were consistent with the above findings. In order to keep concise, only effect sizes for pairwise comparisons at each follow-up point are provided for the purposes of comparison (**Table 4.4**). As can be seen, a similar pattern was observed overall across outcomes; however, effect sizes were mostly larger and more findings achieved significance due to the increased statistical power.

Table 4.2

*Means and Standard Deviations for Intervention Validity and Outcome Measures for Each Condition across Time, with Main and Interaction Effects*

Variable	Baseline		Post-Intervention		1-Month Follow-Up		6-Month Follow-up		Main and Interaction Effects	F (df) p
	M	SD	M	SD	M	SD	M	SD		
<i>Intervention validity</i>										
Mindfulness										
Control	3.04	0.50	3.03	0.54	3.01	0.51	3.08	0.46	Time (T)	2.12 (2,52.56) .131
MBI	2.62	0.69	3.17	0.81	2.94	0.61	3.12	0.88	Condition (C)	5.76 (2,30.99) .007
DBI	2.90	0.30	2.81	0.43	2.83	0.41	3.07	0.50	TxC	2.03 (4,52.57) .104
<i>Primary outcomes</i>										
Weight/Shape Concern										
Control	3.90	1.46	3.74	1.59	3.22	1.79	3.18	1.84	T	0.26 (2,43.76) .77
MBI	4.55	0.86	3.20	1.70	3.83	1.78	3.52	1.84	C	0.50 (2,31.22) .61
DBI	3.76	1.29	3.06	1.47	2.73	1.88	2.88	1.64	TxC	2.81 (4,43.89) .04
Negative Affect										
Control	2.08	0.96	2.07	1.10	2.28	1.34	2.20	1.40	T	1.65 (2,58.82) .20
MBI	2.61	1.27	1.84	1.07	2.46	1.18	1.74	1.02	C	1.02 (2,30.20) .37
DBI	2.16	0.67	1.86	0.40	1.88	1.03	1.77	0.95	TxC	1.41 (4,58.87) .24
<i>Secondary outcomes</i>										
Dietary Restraint										
Control	3.15	1.25	3.17	1.24	2.92	1.25	3.12	1.18	T	0.79 (2,61.45) .46
MBI	4.00	0.71	3.21	1.23	3.08	1.05	3.53	1.12	C	2.57 (2,31.60) .09
DBI	3.32	1.05	2.63	1.15	2.75	1.17	2.60	1.08	TxC	1.62 (4,61.40) .18
Thin-ideal Internalisation										
Control	3.66	0.92	3.83	0.80	3.46	0.82	3.28	1.02	T	1.45 (2,50.90) .25
MBI	4.37	0.59	3.40	0.95	3.54	0.94	3.79	0.99	C	1.90 (2,32.28) .17
DBI	4.03	0.82	3.75	0.62	3.46	0.95	3.58	0.81	TxC	2.96 (4,50.85) .03

Table 4.2 (continued)

*Means and Standard Deviations for Intervention Validity and Outcome Measures for Each Condition across Time, with Main and Interaction Effects*

Variable	Baseline		Post-Intervention		1-Month Follow-Up		6-Month Follow-up		Main and Interaction Effects	F (df) p
	M	SD	M	SD	M	SD	M	SD		
Sociocultural Pressures										
Control	3.82	1.00	3.65	0.97	3.30	1.26	3.46	1.08	T	0.40 (2,43.00) .67
MBI	4.43	0.49	3.49	1.10	3.60	1.04	3.81	1.01	C	0.30 (2,32.15) .74
DBI	4.16	0.73	3.58	0.89	3.53	0.83	3.47	1.19	TxC	0.85 (4,44.96) .50
ED Symptoms										
Control	-0.18	0.65	0.14	0.71	-0.05	0.65	0.07	0.84	T	0.17 (2,43.87) .85
MBI	0.29	0.75	0.07	0.78	0.24	0.70	0.10	0.63	C	1.37 (2,30.53) .27
DBI	-0.11	0.60	-0.25	0.50	-0.17	0.66	-0.20	0.47	TxC	1.59 (4,43.95) .19
Psychosocial Impairment										
Control	2.12	0.71	2.06	0.79	2.00	0.96	2.05	1.02	T	0.03 (2,58.57) .98
MBI	2.73	0.73	2.04	0.90	2.13	0.80	2.20	0.98	C	1.53 (2,31.12) .23
DBI	2.18	0.62	1.94	0.65	1.95	0.92	1.85	1.03	TxC	1.18 (4,58.55) .33

Table 4.3

*Effect Sizes (Cohen's d) for Between-Groups Pairwise Comparisons Controlling for Baseline Assessment and BMI*

Variable	Post-intervention		1-Month Follow-Up		6-month Follow-Up	
	<i>d</i> [95% CI] <i>Control</i>	<i>d</i> [95% CI] <i>DBI</i>	<i>d</i> [95% CI] <i>Control</i>	<i>d</i> [95% CI] <i>DBI</i>	<i>d</i> [95% CI] <i>Control</i>	<i>d</i> [95% CI] <i>DBI</i>
<i>Primary outcomes</i>						
Weight/Shape Concern						
MBI	0.86 [0.04, 1.68]*	0.50 [-0.37, 1.37]	0.03 [-0.76, 0.82]	-0.19 [-1.05, 0.67]	0.13 [-0.66, 0.92]	0.09 [-0.77, 0.94]
DBI	0.34 [-0.43, 1.11]		0.22 [-0.55, 0.99]		0.04 [-0.72, 0.81]	
Negative Affect						
MBI	0.64 [-0.17, 1.45]	0.44 [-0.43, 1.31]	-0.03 [-0.82, 0.76]	-0.45 [-1.31, 0.42]	0.63 [-0.17, 1.44]	0.20 [-0.66, 1.06]
DBI	0.21 [-0.56, 0.98]		0.41 [-0.36, 1.19]		0.43 [-0.34, 1.21]	
<i>Secondary outcomes</i>						
Dietary Restraint						
MBI	0.93 [0.10, 1.76]*	0.18 [-0.67, 1.04]	0.81 [-0.01, 1.63]*	0.52 [-0.35, 1.39]	0.48 [-0.32, 1.28]	-0.18 [-1.04, 0.68]
DBI	0.74 [-0.05, 1.53]		0.27 [-0.50, 1.04]		0.66 [-0.13, 1.45]	
Thin-ideal Internalisation						
MBI	1.22 [0.36, 2.07]**	0.79 [-0.10, 1.68]	0.73 [-0.08, 1.55]	0.39 [-0.47, 1.26]	0.10 [-0.69, 0.89]	0.15 [-0.71, 1.01]
DBI	0.45 [-0.32, 1.23]		0.33 [-0.44, 1.10]		-0.05 [-0.82, 0.72]	
Sociocultural Pressures						
MBI	0.51 [-0.29, 1.31]	0.20 [-0.66, 1.06]	0.17 [-0.62, 0.96]	0.22 [-0.64, 1.08]	0.10 [-0.69, 0.89]	-0.15 [-1.00, 0.71]
DBI	0.31 [-0.46, 1.09]		-0.05 [-0.82, 0.72]		0.25 [-0.52, 1.02]	
Emotion Dysregulation						
MBI	0.72 [-0.09, 1.54]	0.88 [-0.02, 1.78]*	0.70 [-0.11, 1.51]	0.37 [-0.50, 1.23]	0.73 [-0.08, 1.55]	0.08 [-0.78, 0.94]
DBI	-0.14 [-0.91, 0.63]		0.33 [-0.44, 1.10]		0.65 [-0.13, 1.44]	

Note. \* Significant at  $p < .05$ , \*\* Significant at  $p < .01$ ; Cohen's  $d = |M_2 - M_1|/SD_{pooled}$  with adjustment for bias, where 0.2 is small, 0.5 is medium, and  $\geq 0.8$  is large

Table 4.3 (continued)

*Effect Sizes (Cohen's d) for Between-Groups Pairwise Comparisons Controlling for Baseline Assessment and BMI*

Variable	Post-intervention		1-Month Follow-Up		6-month Follow-Up	
	<i>d</i> [95% CI]	<i>d</i> [95% CI]	<i>d</i> [95% CI]	<i>d</i> [95% CI]	<i>d</i> [95% CI]	<i>d</i> [95% CI]
	Control	DBI	Control	DBI	Control	DBI
Escape-Avoidant Coping						
MBI	0.32 [-0.47, 1.12]	-0.24 [-1.10, 0.62]	-0.06 [-0.85, 0.74]	-0.27 [-1.13, 0.59]	0.13 [-0.66, 0.92]	-0.61 [-1.49, 0.27]
DBI	0.57 [-0.21, 1.36]		0.22 [-0.55, 0.99]		0.76 [-0.03, 1.55]	
ED Symptoms						
MBI	0.87 [0.05, 1.70]*	0.17 [-0.68, 1.03]	0.19 [-0.6, 0.98]	-0.09 [-0.94, 0.77]	0.46 [-0.34, 1.26]	0.08 [-0.78, 0.93]
DBI	0.70 [-0.09, 1.49]		0.27 [-0.5, 1.05]		0.37 [-0.40, 1.15]	
Psychosocial Impairment						
MBI	0.90 [0.08, 1.73]*	0.58 [-0.30, 1.45]	0.56 [-0.24, 1.36]	0.41 [-0.46, 1.27]	0.32 [-0.48, 1.11]	-0.07 [-0.93, 0.79]
DBI	0.32 [-0.45, 1.09]		0.14 [-0.62, 0.91]		0.39 [-0.38, 1.16]	

*Note.* \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ ; Cohen's  $d = |M_2 - M_1|/SD_{\text{pooled}}$  with adjustment for bias, where 0.2 is small, 0.5 is medium, and  $\geq 0.8$  is large

Table 4.4

*Effect Sizes (Cohen's d) for Between-Groups Pairwise Comparisons Controlling for Baseline Assessment and BMI, Intention-to-Treat (ITT)*

Variable	Post-intervention		1-Month Follow-Up		6-month Follow-Up	
	<i>d</i> [95% CI]	<i>d</i> [95% CI]	<i>d</i> [95% CI]	<i>d</i> [95% CI]	<i>d</i> [95% CI]	<i>d</i> [95% CI]
	<i>Control</i>	<i>DBI</i>	<i>Control</i>	<i>DBI</i>	<i>Control</i>	<i>DBI</i>
<i>Primary outcomes</i>						
Weight/Shape Concern						
MBI	1.01 [0.26, 1.76]**	0.66 [-0.12, 1.43]	0.07 [-0.64, 0.78]	-0.16 [-0.92, 0.60]	0.18 [-0.52, 0.89]	0.15 [-0.6, 0.91]
DBI	0.34 [-0.38, 1.07]		0.24 [-0.48, 0.97]		0.02 [-0.70, 0.75]	
Negative Affect						
MBI	0.80 [0.06, 1.53]*	0.59 [-0.18, 1.36]	0.06 [-0.65, 0.76]	-0.45 [-1.2, 0.33]	0.69 [-0.04, 1.42]	0.18 [-0.57, 0.94]
DBI	0.21 [-0.51, 0.94]		0.52 [-0.21, 1.26]		0.52 [-0.22, 1.25]	
<i>Secondary outcomes</i>						
Dietary Restraint						
MBI	1.10 [0.34, 1.86]**	0.31 [-0.45, 1.07]	0.99 [0.24, 1.74]**	0.67 [-0.12, 1.43]	0.59 [-0.13, 1.31]	-0.13 [-0.89, 0.62]
DBI	0.81 [0.06, 1.56]*		0.32 [-0.41, 1.05]		0.76 [0.02, 1.51]*	
Thin-ideal Internalisation						
MBI	1.71 [0.88, 2.53]***	1.07 [0.26, 1.88]**	1.05 [0.29, 1.80]**	0.66 [-0.14, 1.41]	0.31 [-0.40, 1.02]	0.28 [-0.48, 1.04]
DBI	0.66 [-0.08, 1.40]		0.38 [-0.35, 1.11]		0.02 [-0.71, 0.74]	
Sociocultural Pressures						
MBI	0.81 [0.08, 1.55]*	0.42 [-0.35, 1.18]	0.45 [-0.27, 1.16]	0.37 [-0.40, 1.12]	0.26 [-0.45, 0.97]	0.06 [-0.70, 0.81]
DBI	0.41 [-0.32, 1.14]		0.06 [-0.66, 0.79]		0.21 [-0.51, 0.93]	
Emotion Dysregulation						
MBI	0.93 [0.18, 1.67]*	1.02 [0.22, 1.83]**	0.78 [0.05, 1.52]*	0.39 [-0.38, 1.14]	0.88 [0.14, 1.62]*	0.11 [-0.65, 0.87]
DBI	-0.11 [-0.84, 0.61]		0.40 [-0.33, 1.13]		0.79 [0.04, 1.54]*	

Note. \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ ; Cohen's  $d = |M_2 - M_1|/SD_{pooled}$  with adjustment for bias, where 0.2 is small, 0.5 is medium, and  $\geq 0.8$  is large

Table 4.4 (continued)

*Effect Sizes (Cohen's d) for Between-Groups Pairwise Comparisons Controlling for Baseline Assessment and BMI, Intention-to-Treat (ITT)*

Variable	Post-intervention		1-Month Follow-Up		6-month Follow-Up	
	<i>d</i> [95% CI] <i>Control</i>	<i>d</i> [95% CI] DBI	<i>d</i> [95% CI] <i>Control</i>	<i>d</i> [95% CI] DBI	<i>d</i> [95% CI] <i>Control</i>	<i>d</i> [95% CI] DBI
Escape-Avoidant Coping						
MBI	0.52 [-0.20, 1.24]	-0.05 [-0.81, 0.70]	0.04 [-0.67, 0.75]	-0.14 [-0.89, 0.62]	0.27 [-0.44, 0.98]	-0.49 [-1.26, 0.27]
DBI	0.61 [-0.13, 1.34]		0.19 [-0.54, 0.91]		0.83 [0.08, 1.58]*	
ED Symptoms						
MBI	1.11 [0.35, 1.87]**	0.41 [-0.36, 1.17]	0.35 [-0.36, 1.06]	0.06 [-0.70, 0.81]	0.56 [-0.16, 1.28]	0.15 [-0.61, 0.90]
DBI	0.72 [-0.02, 1.47]*		0.30 [-0.43, 1.02]		0.42 [-0.31, 1.15]	
Psychosocial Impairment						
MBI	0.89 [0.15, 1.63]*	0.66 [-0.12, 1.43]	0.67 [-0.06, 1.39]	0.47 [-0.30, 1.23]	0.30 [-0.41, 1.01]	-0.16 [-0.92, 0.59]
DBI	0.23 [-0.50, 0.95]		0.19 [-0.53, 0.91]		0.50 [-0.24, 1.23]	

Note. \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ ; Cohen's  $d = |M_2 - M_1|/SD_{pooled}$  with adjustment for bias, where 0.2 is small, 0.5 is medium, and  $\geq 0.8$  is large

### 4.3.3 Clinical significance

An initial indicator of clinical significance was determined by calculating within-group effect sizes of the change between baseline and post-intervention and final follow-up assessment points, with large effect sizes (Cohen's  $d \geq .8$ ) reflecting clinically important change. As shown in **Table 4.5**, the MBI group showed large within-group improvements at both post-intervention and 6-month follow up for our primary outcomes of weight and shape concern and negative affect, as well as for socio-cultural pressure, emotion regulation difficulties, and psychosocial impairment. Additionally, large effect sizes were associated with improvements at post-intervention only for thin-ideal internalisation. The DBI group was associated with a large effect sizes for reduction in socio-cultural pressures and escape-avoidant coping at 6-month follow-up.

A second indicator of clinical significance was determined by calculating reliable change indices from baseline to post-intervention, and from baseline to 6-month assessment. Given the small cell sizes, the following results must be interpreted with caution; however, as can be seen, likelihood ratios indicated a significantly greater number of improved people for the MBI relative to the control group at post-intervention on negative affect, psychosocial impairment, dietary restraint, thin-ideal internalisation and emotion regulation difficulties; and for the DBI relative to control on dietary restraint. There were no significant differences between the interventions and control group by 6-month follow-up.

Table 4.5

*Clinical Significance as Indicated by Within-Group Effect Sizes (Cohen's  $d$ ) and Number of People Who Experienced Reliable Change*

Variable	Control			MBI					DBI				
	$d$	↑ $N$ (%)	↓ $N$ (%)	$d$	↑ $N$ (%)	↓ $N$ (%)	$X_2$	$OR$ (95% $CI$ )	$d$	↑ $N$ (%)	↓ $N$ (%)	$X_2$	$OR$ (95% $CI$ )
<i>Primary outcome</i>													
Weight/Shape Concern													
Post	0.12	2 (13)	0 (0)	1.03	4 (40)	0 (0)	2.57	4.02 (0.66 - 24.33)	0.54	3 (27)	1 (9)	0.93	2.39 (0.38 - 14.9)
6-month	0.55	5 (31)	2 (13)	0.79	3 (30)	0 (0)	0.01	1.10 (0.19 - 6.29)	0.68	4 (36)	1 (9)	0.08	1.26 (0.25 - 6.36)
Negative Affect													
Post	0.02	0 (0)	1 (6)	0.77	3 (30)	0 (0)	6.38*	15.40 (0.70 - 337.23)	0.30	1 (9)	0 (0)	1.85	4.71 (0.18 - 126.91)
6-month	-0.12	2 (13)	2 (13)	0.86	4 (40)	0 (0)	3.13	5.60 (0.77 - 40.6)	0.39	2 (18)	1 (9)	0.16	1.56 (0.18 - 13.11)
<i>Secondary outcomes</i>													
Dietary Restraint													
Post	-0.02	0 (0)	2 (13)	0.72	3 (30)	0 (0)	6.38*	15.40 (0.70 - 337.23)	0.63	5 (45)	0 (0)	10.72**	27.92 (1.34 - 580.28)
6-month	0.03	1 (6)	1 (6)	0.43	2 (20)	0 (0)	1.33	4.29 (0.33 - 55.59)	0.66	4 (36)	0 (0)	3.97	8.57 (0.80 - 91.5)
Thin-ideal Internalisation													
Post	-0.21	0 (0)	0 (0)	1.17	3 (30)	0 (0)	6.38*	15.40 (0.70 - 337.23)	0.34	0 (0)	0 (0)	-	-
6-month	0.45	3 (19)	0 (0)	0.69	2 (20)	0 (0)	0.04	1.24 (0.17 - 9.25)	0.55	3 (27)	0 (0)	0.27	1.63 (0.26 - 10.10)
Sociocultural Pressure													
Post	0.20	1 (6)	0 (0)	1.13	2 (20)	0 (0)	1.11	3.04 (0.34 - 27.16)	0.69	1 (9)	1 (9)	.08	1.48 (0.13 - 16.19)
6-month	0.43	2 (13)	0 (0)	0.75	1 (10)	0 (0)	0.01	0.88 (0.07 - 11.24)	0.83	2 (18)	1 (9)	0.16	1.56 (0.18 - 13.11)
Emotion Dysregulation													
Post	0.14	0 (0)	0 (0)	0.79	3 (30)	0 (0)	6.38*	15.40 (0.70 - 337.23)	0.06	0 (0)	0 (0)	-	-
6-month	0.04	2 (13)	2 (13)	0.93	3 (30)	0 (0)	1.51	3.50 (0.46 - 26.62)	0.58	4 (36)	0 (0)	2.13	4.00 (0.58 - 27.41)
Escape-Avoidant Coping													
Post	0.10	1 (6)	1 (6)	0.64	2 (20)	1 (10)	1.11	3.04 (0.34 - 27.16)	0.49	0 (0)	0 (0)	1.07	0.45 (0.02 - 12.06)
6-month	0.09	1 (6)	3 (19)	0.54	2 (20)	0 (0)	1.33	4.29 (0.33 - 55.59)	0.75	2 (18)	0 (0)	0.92	3.33 (0.26 - 42.21)

Table 4.5 (continued)

*Clinical Significance as Indicated by Within-Group Effect Sizes (Cohen's  $d$ ) and Number of People Who Experienced Reliable Change*

Variable	Control			MBI					DBI				
	$d$	↑ $N$ (%)	↓ $N$ (%)	$d$	↑ $N$ (%)	↓ $N$ (%)	$X_2$	OR (95% CI)	$d$	↑ $N$ (%)	↓ $N$ (%)	$X_2$	OR (95% CI)
ED Symptoms													
Post	-0.46	0 (0)	2 (13)	0.33	2 (20)	1 (10)	4.09	9.71 (0.42 - 225.85)	0.21	2 (18)	0 (0)	3.83	8.68 (0.38 - 200.56)
6-month	-0.36	0 (0)	3 (19)	0.28	0 (0)	0 (0)	-	-	0.13	2 (18)	0 (0)	3.83	8.68 (0.38 - 200.56)
Psychosocial Impairment													
Post	0.08	0 (0)	1 (6)	0.97	4 (40)	0 (0)	8.86*	22.85 (1.07 - 487.02)	0.35	4 (36)	0 (0)	8.23*	19.80 (0.94 - 416.68)
6-month	0.09	4 (25)	2 (13)	0.75	1 (10)	0 (0)	0.75	0.38 (0.04 - 4.00)	0.47	5 (45)	2 (18)	1.22	2.50 (0.49 - 12.89)

Note. ↑ = clinically significant improvement, ↓ = clinically significant deterioration; OR = Odds Ratio representing the odds of clinical improvement relative to the control group; ED = Eating disorder

#### 4.3.4 Qualitative findings

Post-intervention assessment of program acceptability ratings showed no significant differences between interventions for enjoyment [ $t(19) = 0.14, p = .892, d = .06$ ], with both interventions reflecting a high level of enjoyment (MBI,  $M = 4.40, SD = 0.52$ ; DBI,  $M = 4.36, SD = 0.67$ ); or likelihood of continued use [ $t(19) = 0.63, p = .537, d = .26$ ], with all intervention participants indicating they were likely to keep applying techniques learned (MBI,  $M = 4.30, SD = .68$ ; DBI,  $M = 4.09, SD = 0.83$ ). There was a non-significant trend [ $t(19) = 1.54, p = .140, d = .65$ ] for the MBI participants ( $M = 4.30, SD = 0.68$ ) to rate the intervention as more effective than the DBI participants ( $M = 3.82, SD = 0.75$ ). Differences in understanding of concepts [ $t(19) = -2.08, p = .052, d = -.87$ ] and ease of use [ $t(19) = -2.62, p = .017, d = -1.10$ ] both favoured DBI (understanding,  $M = 4.82, SD = 0.41$ ; ease of use,  $M = 4.27, SD = 0.65$ ) over MBI (understanding,  $M = 4.40, SD = 0.52$ ; ease of use,  $M = 3.60, SD = 0.52$ ).

Differences in hours per week spent using the skills learned in the MBI (post-intervention,  $M = 0.72, SD = 0.27$ ; 1-month follow-up,  $M = 0.32, SD = 0.34$ ; 6-month follow-up,  $M = 0.43$ ) versus the DBI (post-intervention,  $M = 0.75, SD = 0.65$ ; 1-month follow-up,  $M = 0.69, SD = 0.68$ ; 6-month follow-up,  $M = 0.71, SD = .1.34$ ) conditions were not evident at post-intervention ( $d = .07$ ); however, there was a trend towards less time spent using the skills among MBI participants at 1-month ( $d = .65$ ) and 6-month follow-up ( $d = .24$ ).

Content of the open-ended questions regarding reasons for any non-use of the intervention skills, as well as aspects both liked and disliked about the interventions, reflected some different themes for the MBI and DBI groups. MBI participants reported reasons such as being too busy, feeling the need for privacy, and being forgetful for not using skills, whereas DBI participants reflected the difficulty of

implementing the techniques outside of the group sessions, and reporting less belief in their effectiveness. While many participants across both interventions indicated the supportive group environment as beneficial, this was more consistently raised among DBI participants. In terms of disliked aspects, participants from both interventions reflected the desire for the program to be longer, and a couple of DBI participants reflecting discomfort at sharing personal issues with little preamble.

#### 4.4 Discussion

This pilot trial evaluated the potential of a novel mindfulness-based approach to reduce risk for disordered eating by comparing it against an established dissonance-based intervention approach and an assessment-only control in a high-risk sample of young adult women with body image concerns. To date, this is the first study that has evaluated a mindfulness-based program with respect to eating disorders in a prevention context. Contrary to expectations, there was limited support for the dissonance intervention overall, and although important short-term improvements were demonstrated for the mindfulness intervention across eating disorder risk factors, symptoms, and associated psychosocial impairment, these were largely diminished over time.

The mindfulness intervention produced statistically significant decreases to post-intervention in weight and shape concern, thin-ideal internalisation, dietary restraint, eating disorder symptoms and psychosocial impairment, with between group comparisons to control associated with large effect sizes ( $d > .8$ ). A lesser impact of mindfulness on emotion-related risk factors of negative affect and emotion regulation difficulties was also demonstrated, associated with medium effect sizes ( $d = .64$  and  $d = .72$ , respectively). ITT analysis showed similar findings, with all outcomes except escape-avoidance demonstrating large effect sizes. Collectively,

these between-group effects to post-intervention compare favourably with effects on corresponding outcomes from the original efficacy trial of the dissonance program (Stice et al., 2006), and are noticeably larger than many effect sizes reported in a meta-analytic review of a range of prevention programs (Stice, Shaw, et al., 2007). Although this is an encouraging sign for a preliminary application of mindfulness in this context, the benefit of mindfulness was largely lost over follow-up, with minimal support for gains at 6-month follow-up for emotion-related difficulties only. Indicators of clinical importance reflected a similar pattern of results. More people experienced significantly reliable improvements than control at post-intervention on measures of negative affect, dietary restraint, thin-ideal internalisation, emotion regulation difficulties, and psychosocial impairment.

The pattern of results for the efficacy of the dissonance intervention demonstrated a weaker impact overall. No comparisons of any outcome variable with respect to control attained statistical significance; however, medium to large effect sizes suggests some benefit with regard to reducing dietary restraint and eating disorder symptoms at post-intervention, with a moderate effect still evident for reductions in dietary restraint at 6-month follow-up. These size of these effects indicate the likelihood of attaining statistical significance in a larger sample, which is supported by significant findings for these outcomes in the ITT analysis. Indices of clinical importance also reflect benefit that is less widespread than for mindfulness, with the only outcomes indicating more people experiencing reliable change than control being dietary restraint and psychosocial impairment; and with only the measure of sociocultural pressures reflecting a large within-group effect size for a reduction at 6-month follow-up. A comparison with corresponding outcomes reported in Stice et al. (2006) reveals our implementation of dissonance to be less effective overall, with fewer statistically significant findings and demonstrating

smaller effects across outcomes, with the exception of comparable effects on reduction in dietary restraint and eating disorder symptoms at post-intervention. Somewhat surprisingly, given that dissonance does not specifically target avoidance as in the mindfulness intervention, dissonance showed an advantage over control and mindfulness in reducing escape-avoidant coping. Although the reason for this is unclear, it may be that the emphasis on activism and practical strategies for combatting the thin-ideal contained within the dissonance program was translated into a desire to take action rather than adopt a passive avoidance response when faced with difficulty.

Thus, more consistent support was achieved for the mindfulness intervention than for the dissonance intervention in terms of reducing risk for disordered eating over the short-term. This pattern of results is encouraging for a number of reasons. First, measurable effects on weight and shape concerns and negative affect are important given their chief role in the development of disordered eating (Jacobi et al., 2011). Second, effects were achieved with mindfulness despite participants demonstrating less compliance with homework tasks, lower ratings of understanding and ease of use, and less practice of skills over time than dissonance participants. The underlying reasons for these aspects, and also the higher dropout rate for mindfulness participants, may be due to the counter-intuitive and metacognitive nature of the mindfulness technique. This makes it less accessible for some people, and conceivably less attractive initially than the dissonance intervention. Future efforts to improve these aspects may improve outcomes, both in terms of larger immediate effects and in the maintenance of impact over time. However, it must also be noted that mindfulness may only be useful for certain groups of people which is a necessary consideration for widespread dissemination. Third, acceptance has been shown to be difficult to engage with initially (Chapter 3; Singer & Dobson, 2009),

and has traditionally required consistent practise over time in order for optimal benefit (Williams, 2010). Indeed, many mindfulness interventions are time-intensive for this reason, which perhaps limits the usefulness in a prevention context where there is likely to be less incentive for such commitments of time and energy. Therefore, demonstrating benefits using a relatively brief intervention as implemented in the current study (three 1-hr sessions) is an important contribution to determining whether this approach is useful as a prevention strategy.

Nonetheless, it is important to emphasise the lack of maintenance of intervention effects over follow-up, as longer-term benefits are required for a program to be considered efficacious. It is possible that our small sample limited our power to detect intervention effects at follow-up, where group differences are likely to be smaller due to improvements experienced in the control group as a result of repeated assessments and regression toward the mean. However, it is also probable that previously mentioned aspects (i.e., less understanding, ease, and practise over time) are likely to have contributed. It is interesting to note that weaker effects were found across outcomes at the 1-month assessment point, which coincides with the least amount of practise reported by mindfulness participants. Further support comes from qualitative data, which overwhelmingly reflected time constraints and forgetfulness as reasons for not using the techniques during the follow-up period. A consideration of strategic efforts to produce sustained benefits without an extensive increase in time commitment will be profitable in determining the utility of this approach in future. This could include strategies for increasing practice of mindfulness such as electronic reminders, booster sessions, or an online presence for encouraging ongoing use of mindfulness-based concepts (e.g., social media, moderated discussion forum).

Although dissonance participants were not actively encouraged to continue

practising skills as for the mindfulness intervention, they were still asked whether they had used any of the intervention techniques over follow-up. These responses were qualitatively different to mindfulness participants, reflecting reasons such as the difficulty of implementing the techniques in everyday life, and feeling alone in their quest against the thin-ideal. Additional qualitative comments consistently reflected the value gained from the supportive group environment. Given that dissonance techniques often rely on an effortful approach involving challenging others or engaging in activism and behavioural experiments, the importance of the group context for the success of dissonance techniques cannot be discounted. As such, increased benefits may be seen for dissonance with future encouragement and provided opportunities to connect with supportive others in the fight against societal appearance ideals.

Given the previous empirical support for DBIs, it is important to consider explanations for the comparatively weaker effects of the dissonance intervention in this study, both in comparison to the mindfulness intervention and to the original efficacy trial undertaken by Stice and colleagues (2006). Again, it must first be noted that the small sample limits the ability to detect statistical significance and thus a larger sample may have revealed significant findings and increased reliability for effect sizes obtained. Second, there were a higher number of participants who received individual sessions in the mindfulness condition than in the dissonance condition and who therefore arguably received greater time and attention. However, we believe that the impact of this would have been minimal, given that there was a maximum of four participants in the dissonance groups and therefore still ample opportunity for each person to receive dedicated time and attention. In reality, this may even have had a detrimental impact on the individual mindfulness participants, as they were unable to receive the benefits of the group context. Additionally, Stice

and colleagues achieved reliable effects of dissonance with larger groups (6-10 participants). Third, it is possible that cultural differences accounted for reduced effects of the current study in comparison to DBIs evaluated in the United States. For example, Australians may exhibit more reticence toward sharing personally in a group context and thus reduced engagement may have affected the extent of dissonance. This highlights the importance of validating interventions cross-culturally. Finally, the dissonance-based intervention in the current study was not delivered according to optimal conditions as conducted in the original dissonance trial. This includes delivery by a facilitator (author) who had not received training in delivering dissonance material, or the *The Body Project* content in particular; as well as conducting groups in very small sizes as opposed to the larger groups as originally proposed. These factors may have therefore contributed to reducing the effectiveness of the intervention in the current study.

Interestingly, the mindfulness condition was more effective in producing reductions in thin-ideal internalisation than the dissonance intervention. Mindfulness theoretically achieves a reduction in thin-ideal internalisation by changing the way one relates to the experience triggered by contact with idealised images and pressures to be thin: namely, by taking a non-judgmental stance such that thoughts and feelings are allowed but not necessarily accepted as true, and refraining from secondary reactions leading to internalisation and related consequences. This view is supported by our finding that the mindfulness condition produced large increases in mindfulness. Our assertion that mindfulness may also work by targeting multiple risk factors directly and thus having wider benefit is hard to separate from the flow-on effects of the large decrease in thin-ideal internalisation; however, support is provided by the maintenance of emotion-related difficulties through to follow-up despite the lack of maintenance of reductions in thin-ideal internalisation.

Additionally, qualitative comments reflected a number of participants who reported feeling better equipped to deal with emotional difficulty in general, and that mindfulness had helped with “more than just body image.”

While the current study demonstrates many strengths, the results need to be interpreted in light of some significant limitations. First and foremost, the study contained only a small number of participants due to slow recruitment. The reasons for limited uptake are likely multi-faceted and thus are explored in Chapter 5. Clearly, this mindfulness-based approach needs to be evaluated within a larger sample to increase confidence that the effects obtained represent true effects. One approach to this is to use mandated participation, an approach that is employed by adapting for high school delivery and reported in Chapter 6. Due to the small sample, we were unable to assess for reductions in the onset of diagnostic levels of eating disorder pathology or to assess mediating and moderating factors of intervention effects. These are important considerations for determining the efficacy and mechanisms of prevention programs. A second limitation is our exclusive use of self-report data, which introduces possible biases in reporting. The fact that intervention participants developed a relationship with their group facilitator, who was also the research coordinator (author), may have resulted in increased demand effects over and above that of control participants. Future studies will be benefited by the inclusion of objective measures regarding change in outcomes. Finally, our follow-up period was relatively short (6 months) and thus future trials should aim to monitor intervention effects over a longer period of time.

Overall, this study has provided initial support for a mindfulness-based strategy in the amelioration of eating disorder risk. Specifically, these results show the benefit of mindfulness in producing short-term reductions in eating disorder risk factors, symptoms, and associated psychosocial impairment. Nevertheless, the

small sample sizes requires that conclusions remain at the preliminary level. Future research needs to address whether immediate effects can be maintained over the longer-term before such programs can be considered effective. It will also be important to consider moderators of impact and mechanisms of operation to further refine the use and impact of the intervention.

## Chapter 5.

### Investigation of Voluntary Participation in Body Image Interventions Among Female University Students<sup>3</sup>

#### 5.1 Overview

Given the small sample obtained in the efficacy trial reported in the previous chapter, it was important to consider reasons behind the limited uptake as these have implications for the dissemination of programs to the population of interest. The aim of the current study was therefore twofold: first, to explore potential factors which may prevent university-aged females from participating in face-to-face interventions. Due to the study and work demands on undergraduate students, and the personal nature of body image concerns, it was expected that time constraints and the face-to-face group format of the intervention presented would be the most commonly endorsed reasons for not volunteering. It was also hypothesised that greater belief in the helpfulness of body image interventions, and higher levels of body concern would be predictive of participation. The second aim was to evaluate a preliminary experimental attempt to increase interest and motivation regarding voluntary participation. It was predicted that those undergoing the motivational enhancement manipulation would show a greater interest and likelihood of participation than the control group.

#### 5.2 Method

##### 5.2.1 Participants

Participants were 124 female first-year undergraduate psychology students

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<sup>3</sup> Findings from this chapter have been published in Behaviour Research and Therapy [Atkinson, M. J., & Wade, T. D. (2013). Enhancing dissemination in selective eating disorders prevention: An investigation of voluntary participation among female university students. *Behaviour Research and Therapy*, 51(12), 806-816]. Additionally, parts of this chapter were presented by the author at the Annual Conference and Workshops, British Association for Behavioural & Cognitive Psychotherapies (London, United Kingdom) in 2013.

aged 17 to 25 ( $M = 19.30$ ,  $SD = 1.55$ ) recruited from a South Australian university. The majority of the sample was Caucasian (91%), with the remainder identifying as Asian (8%) and African (1%), which is representative of the wider community in South Australia. All participants were recruited as part of a volunteer research pool in which participation earned course credit. Inclusion criteria were that participants needed to be female and aged 17 to 25. Ethics approval was obtained from the Flinders Social and Behavioural Research Ethics Committee prior to commencement, and informed consent was implied via participation in and completion of the survey. A priori power analysis using G\*Power (version 3.1.3; Faul, Erdfelder, Buchner, & Lang, 2009) indicated that a minimum sample size of 118 would be required to detect medium effect sizes at a power of .80 with an alpha of .05 for a multiple regression model including ten predictors.

### **5.2.2 Procedure**

A survey was developed using the online survey tool, SurveyMonkey (<http://www.surveymonkey.com>), and was made available via the First Year Research Participation Pool from April to September 2012. Students volunteered for the study, entitled “Body Image and Related Attitudes”, and completed the survey online at a computer of their convenience. The survey was introduced as being about beliefs and attitudes regarding body image and participants were informed that all answers were voluntary and confidential. The first section involved demographic questions and psychological measures. Participants were then randomly allocated via birth month to complete a set of questions to increase self-directed motivation (motivational enhancement) or to skip to the next stage (control). The final section involved the presentation of the recruitment flyer used for the intervention trial, followed by a set of qualitative questions regarding participation. The survey took approximately 15 to 20 minutes to complete, followed by debriefing.

### 5.2.3 Measures

**5.2.3.1 Demographic information.** Participants were asked their date of birth, ethnicity, height, current and ideal weight. Body Mass Index (BMI) was subsequently calculated as the ratio of current weight (kg) to height squared ( $m^2$ ). A weight discrepancy variable was calculated as the difference between current and ideal weight. Only one person, subsequently randomised to the motivational enhancement group, did not report height and weight.

**5.2.3.2 Outcome measures.** The majority of measures employed in the current study have been described in chapters 3 and 4, including those for body dissatisfaction (EDI-BD; current sample  $\alpha = .87$ ); weight and shape concerns (EDE-Q; current sample  $\alpha = .96$ ); negative affect, used as described in Chapter 3 (PANAS-NA; current sample  $\alpha = .89$ ); emotion regulation difficulties (DERS; current sample  $\alpha = .93$ ); and escape-avoidant coping style (WOC-EA; current sample  $\alpha = .58$ ). An additional measure was selected to assess personal ineffectiveness for the ability to tap into constructs of self-esteem and self-efficacy.

**5.2.3.2.1 Ineffectiveness.** The Ineffectiveness subscale of the Eating Disorders Inventory (EDI-IE; Garner, Olmsted, & Polivy, 1983) consists of 10 items assessing feelings of inadequacy, worthlessness, and control, such as “I feel that I can achieve my standards” and “I feel generally in control of things in my life.” Scoring was the same as for the EDI-BD, where participants rated items on a 6-point scale from *never* to *always*. The mean item score was used where higher scores reflected greater perceived ineffectiveness. This subscale has been found to have high internal reliability in an university sample (0.92; Frayne & Wade, 2006) and correlates significantly with the EAT self-esteem subscale ( $r = 0.76$ ,  $p < .001$ , Garner, Olmsted, et al., 1983). Internal consistency for the current study was .90.

**5.2.3.3 Risk status.** The Weight Concerns Scale (WCS; Killen et al., 1994)

is a short 5-item scale measuring concern over and importance of body weight and shape. Response items were standardised in order to account for varying response sets, then summed and averaged to form a mean item score where higher scores reflected greater weight concern. As described in Chapter 4, the WCS has been used previously as a screening measure to determine risk for body image and eating related disturbance (Taylor et al., 2006) and shows good predictive validity (Jacobi, Abascal, & Taylor, 2004). As outlined in Taylor et al., participants were considered to be at risk if they scored 50 or higher on the WCS, reported they were moderately or very afraid of gaining 1.5 kilograms, or indicated that weight was the most important thing in their life.

#### **5.2.4 Motivational Enhancement Exercise**

Participants randomised to receive the motivational enhancement exercise were presented with five items: (1) a rating of how realistic the thin-ideal was on a scale from 1 (*not at all*) to 5 (*extremely*); (2) a rating of how achievable the thin-ideal was on a scale from 1 (*not at all*) to 5 (*extremely*); (3) listing the costs associated with pursuing the thin-ideal, both to the individual and to society; (4) providing advice and recommendations for a friend feeling badly about her weight or appearance; and finally, (5) a rating of how important it was to them to engage in ways to feel better about themselves and their bodies, using the same 5-point Likert scale from 1 (*not at all*) to 5 (*extremely*). These items were constructed based on cognitive dissonance work conducted by Stice and colleagues in order to reduce risk for disordered eating (e.g., Stice et al., 2001; Stice et al., 2006), with the aim of being non-directive in order to maximise independent attributions.

#### **5.2.5 Recruitment Flyer and Qualitative Questions**

In order to explore likely participation in a body image intervention study, a recruitment flyer for an ongoing prevention research trial was presented. This flyer

asked “would you like to feel better about your body?” and included a brief description of the requirements of participating in the intervention study, the eligibility criteria, and contact details. Presentation of the flyer was followed by a final set of items. Using a 5-point Likert scale from 1 (*not at all*) to 5 (*extremely*), participants were asked to rate their interest in participating (*interest*), likelihood of contacting the researcher in order to participate (*likelihood*), how helpful they thought the program would be for improving body image (*helpfulness*), and how confident they were that body image concerns could be improved in general (*confidence*). In addition to these ratings, participants were asked to select from a list of reasons for choosing not to participate (multiple responses were allowed), and to state anything they already engaged in to feel better about their bodies (free report). Participants were then given the option to leave their email address if they were interested in participating in the intervention trial.

### **5.2.6 Design**

Within a cross-sectional survey design, a two group (motivational enhancement, control) between-subjects manipulation was employed in order to assess the impact of increasing self-motivation on participation, indexed by interest in participating and likelihood of contacting the researcher. Participants were randomised to one of the two groups via birth month.

### **5.2.7 Statistical Analyses**

All analyses were again conducted using IBM SPSS, version 19 (IBM Corp., 2010). As in previous chapters, each variable was screened for missing data, normality, univariate and multivariate outliers by experimental group prior to commencing analysis. Square root transformations were applied to the variables of *weight discrepancy*, *negative affect* and *likelihood*, and an inverse transformation applied to BMI, in order to account for positive skewness. In accordance with

recommendations by Tabachnick and Fidell (2013), univariate outliers identified for *weight discrepancy* were recoded to be one unit larger than the next most extreme score. A correlation matrix was generated to explore associations among all variables. Regarding the first aim, frequencies were used to obtain information regarding reasons for participation, and a linear multiple regression analysis was run for each of the dependent variables *interest* and *likelihood* to ascertain predictors of participation. BMI was included as a covariate at the first step, and then potential predictors included at the second step, with all variables centred to reduce multicollinearity (Aiken & West, 1991). For the purpose of using BMI as a covariate, the mean BMI value was substituted for the one missing case. In order to address the second aim, differences between the motivational enhancement and control groups on participation were assessed using a one-way MANCOVA, given the correlation between the dependent variables *interest* and *likelihood*.

### 5.3 Results

#### 5.3.1 Descriptive Statistics

Three participants withdrew from the survey prior to randomisation and were subsequently excluded, leaving 121 participants available for analysis. The young women reported a mean BMI of 22.28 ( $SD = 3.84$ , range: 15.57 – 39.97) and reflected an ideal weight that was, on average, 6.19 kilograms ( $SD = 6.76$ , range: -9.00 – 41.00) below their current weight. According to screening criteria using the WCS, 59% of participants met the cut-off for exhibiting body weight concerns, despite being a non-clinical sample. Means and standard deviations for all other variables for the total sample and by experimental group are displayed in **Table 5.1**.

#### 5.3.2 Ratings and Reasons for Participation, Helpfulness and Confidence

As shown in **Table 5.1**, interest in participating and likelihood of contacting the researcher in order to participate were low. Belief that the intervention might be

helpful and confidence that body concerns could be improved in general were slightly higher, reflecting moderately positive attitudes. Sixteen participants (13%) left their email addresses to be contacted regarding participation in the intervention, and this was split evenly between the motivational enhancement ( $n = 8$ ) and control ( $n = 8$ ) conditions.

Cell counts and percentages for all available reasons regarding interest and likelihood of participation are displayed in **Table 5.2**, for the total sample and by low and high weight concern risk groups. As can be seen, the majority of participants cited time as a reason for choosing not to participate. Results of the chi-square test of independence indicate that high risk participants were more likely to list worry about what others would think, and less likely to list not having body concerns as reasons for non-participating. Reasons reported in the 'Other' category (7%) included responses such as not wanting to be interviewed over the phone, avoidance due to anxiety, and the erroneous belief that the program would focus unduly on the negatives of being overweight rather than of being underweight.

Regarding reasons for helpfulness ratings, both the negative and positive aspects of the group format were equally endorsed as reasons. Enabled by the capacity to select multiple responses, 8 participants (7%) indicated that sharing would both make people feel better and make people feel worse and 18 participants (15%) responded that the group format would be both useful and embarrassing. Chi-square results indicated that those high on weight concerns were more likely to endorse that you cannot improve body image, that a group format would be embarrassing, and to not endorse that sharing would make people feel better. Reasons reported in the 'Other' category (11%) were responses such as not knowing exactly what the program involved, that everybody is different and needs a different approach, and that media has too much influence.

Table 5.1

*Untransformed Means, Standard Deviations and Zero-order Correlations Between All Variables for Total Sample (N = 121)*

<b>Variable</b>	<b>M</b>	<b>SD</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>	<b>11</b>	<b>12</b>
1. Interest	2.27	0.97	.65**	.26**	-.008	.14	.26**	.13	.06	.10	.14	-.003	.01
2. Likelihood	1.85	0.85		.23*	.10	.03	.14	.03	.01	-.03	.01	-.01	-.01
3. Helpfulness	3.14	0.80			.58**	-.20*	-.12	-.15	-.01	-.12	-.04	-.14	-.10
4. Confidence	3.08	0.82				-.25**	-.34**	-.19*	-.16	-.31**	-.17	-.11	-.13
5. Body dissatisfaction	3.84	1.15					.49**	.86**	.35**	.32**	.33**	.42**	.47**
6. Ineffectiveness	2.95	0.89						.50**	.67**	.59**	.30**	.15	.22*
7. Weight & shape concerns	4.42	1.67							.46**	.41**	.41**	.41**	.44**
8. Negative Affect	1.50	0.27								.65**	.41**	.07	.08
9. Emotion dysregulation	2.63	0.61									.42**	.05	.13
10. Avoidant coping	2.41	0.48										.21*	.21*
11. BMI	22.28	3.84											.70**
12. Weight discrepancy	6.19	6.76											

*Note.* BMI = Body Mass Index; Weight discrepancy = ideal – current weight.

Table 5.2

*Frequencies of Reasons for Participation, Helpfulness and Confidence Ratings, for Total Sample and by Risk Status*

		<b>Total (n = 121)</b>	<b>Low Risk (n = 50)</b>	<b>High Risk (n = 71)</b>	$\chi^2 (p), df = 1$
		<i>n (%)</i>	<i>n (%)</i>	<i>n (%)</i>	
<b>Reasons for non-participation</b>					
I don't have the time	No	29 (24.0)	14 (48.3)	15 (51.7)	.76 (.383)
	Yes	92 (76.0)	36 (39.1)	56 (60.9)	
I'm worried about what others would think	No	81 (66.9)	42 (34.7)	39 (32.2)	11.20 (.001)
	Yes	40 (33.1)	8 (6.6)	32 (26.4)	
I can't get to Flinders University	No	117 (96.7)	49 (40.5)	68 (56.2)	.46 (.500)
	Yes	4 (3.3)	1 (0.8)	3 (2.5)	
I don't like the group format	No	97 (80.2)	43 (35.5)	54 (44.6)	1.83 (.177)
	Yes	24 (19.8)	7 (5.8)	17 (14.0)	
I'm not concerned about my body	No	98 (81.0)	31 (25.6)	67 (55.4)	19.96 (<.001)
	Yes	23 (19.0)	19 (15.7)	4 (3.3)	
I don't like that it is a research study	No	107 (88.4)	42 (34.7)	65 (53.7)	1.63 (.201)
	Yes	14 (11.6)	8 (6.6)	6 (5.0)	
I don't want to be in the monitoring group	No	99 (81.8)	38 (31.4)	61 (50.4)	1.94 (.164)
	Yes	22 (18.2)	12 (9.9)	10 (8.3)	
<b>Reasons for helpfulness rating</b>					
You can't improve body image	No	115 (95.0)	50 (41.3)	65 (53.7)	4.45 (.035)
	Yes	6 (5.0)	0 (0.0)	6 (5.0)	
Sharing with other people would make people feel better	No	64 (52.9)	19 (15.7)	45 (37.2)	7.59 (.006)
	Yes	57 (47.1)	31 (25.6)	26 (21.5)	
Sharing with other people would make people feel worse	No	92 (76.0)	42 (34.7)	50 (41.3)	2.97 (.085)
	Yes	29 (24.0)	8 (6.6)	21 (17.4)	
A group format would be too embarrassing for people	No	71 (58.7)	36 (29.8)	35 (28.9)	6.24 (.013)
	Yes	50 (41.3)	14 (11.6)	36 (29.8)	

Table 5.2 (continued)

*Frequencies of Reasons for Participation, Helpfulness and Confidence Ratings, for**Total Sample and by Risk Status*

		<b>Total</b> ( <i>n</i> = 121)	<b>Low Risk</b> ( <i>n</i> = 50)	<b>High Risk</b> ( <i>n</i> = 71)	$\chi^2$ ( <i>p</i> ), <i>df</i> = 1
		<i>n</i> (%)	<i>n</i> (%)	<i>n</i> (%)	
<b>Reasons for helpfulness rating (continued)</b>					
It's too short, it wouldn't be enough time to make a difference	No	101 (83.5)	43 (35.5)	58 (47.9)	
	Yes	20 (16.5)	7 (5.8)	13 (10.7)	
A group program would be a good format	No	60 (49.6)	19 (15.7)	41 (33.9)	4.58 (.032)
	Yes	61 (50.4)	31 (25.6)	30 (24.8)	
<b>Reasons for confidence rating</b>					
Feelings about your body are too set in concrete to be influenced	No	100 (82.6)	44 (36.4)	56 (46.3)	1.70 (.192)
	Yes	21 (17.4)	6 (5.0)	15 (12.4)	
There's too much pressure from the media and others	No	54 (44.6)	21 (17.4)	33 (27.3)	.24 (.626)
	Yes	67 (55.4)	29 (24.0)	38 (31.4)	
Body image can only be improved by physically changing your body	No	81 (66.9)	41 (33.9)	40 (33.1)	8.73 (.003)
	Yes	40 (33.1)	9 (7.4)	31 (25.6)	
It would take a lot of time and effort to change the way you think and feel	No	48 (39.7)	27 (22.3)	21 (17.4)	7.31 (.007)
	Yes	73 (60.3)	23 (19.0)	50 (41.3)	

Regarding reasons associated with ratings of confidence that body image can be improved, chi-square tests showed that those with high weight concerns were more likely to endorse that body image can only be improved via physical changes,

and that it would take a lot of time and effort to change thoughts and feelings about body image. Responses in the ‘Other’ category (13%) included reasons for providing low confidence ratings (such as body image being a media and cultural issue, and needing more than just help or encouragement) as well as reasons for positive confidence ratings (such as sharing and uniting with other women, changing the inside to reflect on the outside, and refraining from internalisation of physical ideals).

### 5.3.3 Current Practices

When asked about practices already engaged in to help feel better about their bodies, a significant proportion reported exercise (55%) and/or “healthy” eating (36%), with additional responses categorised as: shopping, clothing and make-up (17%); use of supportive others (10%); media literacy approaches (5%); distraction or relaxation activities (3%); as well as cognitive techniques such as restructuring of thoughts (13%), positive thinking (5%), self-compassion (5%), and motivational approaches (2%). Seventeen per cent of participants gave no response.

### 5.3.4 Predictors of Participation

Zero-order correlations between all variables are shown in **Table 5.1**. As can be seen, both indices of participation, *interest* and *likelihood*, were positively related to *helpfulness*, and *interest* was also positively correlated with *ineffectiveness*. To assess the unique contributions of the variables when considered together, a linear regression analysis was performed for each of the dependent variables, *interest* and *likelihood*. BMI and weight discrepancy were added at the first step in order to ascertain the predictive ability of the independent variables while controlling for current body size, and together accounted for .3% and 1% of the variance for *interest* and *likelihood*, respectively. Adding the predictor variables at Step 2 explained a significant additional variance for *interest* (21.6%),  $F\Delta(8,110) = 3.80, p = .001, f^2 = .28$ ; but not for *likelihood* (12.0%),  $F\Delta(8,110) = 1.90, p = .67, f^2 = .15$ .

**Table 5.3** displays the coefficients for individual predictors. As can be seen, helpfulness, ineffectiveness, and negative affect made significant contributions in predicting interest (accounting for 9.1%, 6.5%, and 3.5% of the variance, respectively). Thus, a greater belief in the helpfulness of body image interventions, higher personal ineffectiveness, and lower negative affect was associated with a greater interest in participation. Helpfulness and ineffectiveness also made smaller but still significant contributions in predicting likelihood, accounting for unique variances of 4.8% and 3.9%, respectively.

### 5.3.5 Effect of Motivational Enhancement on Prospective Participation

A series of independent samples t-tests (**Table 5.4**) revealed no significant differences between experimental conditions on any of the variables measured prior to the motivational enhancement exercise. Results from separate MANCOVAs, controlling for BMI and weight discrepancy, also indicated no significant main effects of condition ( $F [2, 114] = .27, p = .764; Wilk's \lambda = 1.00, \text{partial } \eta^2 = .005$ ) or risk status ( $F [2, 114] = .89, p = .414; Wilk's \lambda = .99, \text{partial } \eta^2 = .015$ ) with regard to interest and likelihood of participation. Additionally, despite a trend towards motivational enhancement being more effective for high-risk participants, the interaction between condition and risk status for interest and likelihood of participation was not significant ( $F [2, 114] = 2.50, p = .087, Wilk's \lambda = .96, \text{partial } \eta^2 = .042$ ).

Table 5.3

*Individual Predictors of Interest and of Likelihood of Participation, Controlling for BMI and Weight Discrepancy*

Variable	Interest			Likelihood		
	$\beta$	$t(p)$	SPC <sup>2</sup>	$\beta$	$t(p)$	SPC <sup>2</sup>
BMI	.02	.15 (.884)	.0002	.18	1.15 (.254)	.010
Weight discrepancy	-.12	-.68 (.495)	.003	-.29	-1.62 (.109)	.021
Helpfulness	.38	3.59 (.001)	.091	.28	2.46 (.015)	.039
Confidence	-.11	-.98 (.331)	.007	-.01	-.08 (.933)	.0001
Body dissatisfaction	.08	.44 (.663)	.001	.05	.28 (.782)	.0006
Ineffectiveness	.40	3.03 (.003)	.065	.31	2.21 (.029)	.039
Weight & shape concerns	.04	.22 (.828)	.0003	.05	.28 (.781)	.0006
Negative affect	-.30	-2.24 (.027)	.035	-.19	-1.32 (.191)	.014
Emotion dysregulation	-.01	-.07 (.942)	.00004	-.08	-.66 (.511)	.003
Avoidant coping	.13	1.30 (.196)	.012	.06	.53 (.598)	.002

*Note.* BMI = Body Mass Index; Weight discrepancy = current – ideal weight; SPC<sup>2</sup> = Semi-partial correlation squared

Table 5.4

*Means and Standard Deviations for All Variables by Group, and Between-Group Differences for Individual Predictor Variables at Baseline*

Variable	Motivational Enhancement (n = 64)		Control (n = 57)		$t(p)$
	$M$	$SD$	$M$	$SD$	
BMI (transformed)	1.34	.07	1.34	.07	.12 (.907)
Weight discrepancy (transformed)	3.93	.60	3.92	.73	.12 (.908)
Ineffectiveness	3.00	.99	2.89	.76	.67 (.503)
Body dissatisfaction	3.95	1.17	3.71	1.13	1.17 (.243)
Weight & shape concerns	4.60	1.68	4.22	1.64	1.26 (.210)
Negative affect (transformed)	1.52	.27	1.48	.23	.87 (.386)
Emotion dysregulation	2.66	.67	2.59	.55	.65 (.520)
Avoidant Coping	2.45	.45	2.36	.51	1.03 (.306)
Outcome variables					
Interest	2.34	1.06	2.19	.88	
Likelihood (transformed)	1.34	.31	1.31	.30	
Helpfulness	3.13	.83	3.16	.77	
Confidence	3.08	.84	3.09	.81	

*Note.* BMI = Body Mass Index; Weight discrepancy = current – ideal weight.

## 5.4 Discussion

The current study was designed to understand reasons for the limited uptake into the intervention study described in Chapter 4, with the ultimate aim of informing methods to improve dissemination of effective strategies to ameliorate body image concerns and prevent disordered eating in individuals at risk. Specifically, the aims were to exploring factors that may prevent voluntary participation in body image interventions among young adult women, and evaluate a brief experimental strategy aimed at increasing motivation to participate in such programs.

Consistent with one of the challenges in implementing eating disorders prevention discussed by Becker and colleagues (Becker, Ciao, et al., 2008), participants in the current study showed limited interest in participating in the research trial of body image interventions and were also unlikely to contact the researcher to enquire about participation. Slightly more encouraging, participants felt that the interventions would be somewhat helpful (based on limited information about the content of the programs), and were moderately confident that body image concerns could be improved in general. As predicted, the most commonly endorsed reason for choosing not to participate was lack of time (76%). Although this percentage may be inflated in our sample due to the greater number of required study participation hours at a first-year level, it is typical of this age group in general to be juggling multiple commitments across study, work, family and social domains and therefore is likely to also generalise outside of this context. It seems likely that capturing young adults with myriad commitments in future will necessarily entail programs that employ time-flexible delivery.

It was also predicted that the group nature of the programs would be a deterrent for participation based on the personal nature of body image concerns. The results indicate mixed support for this idea, in that comparative numbers endorsed

both positive and negative aspects of the group format. It is interesting to note however that participants scoring high on weight concerns form the majority of those who cited dislike of the group format, deeming it too embarrassing, advocating that sharing with others would make people feel worse, and being worried about what others would think. These aspects are important to consider given that young females experiencing weight concerns are often the target of eating disorder prevention efforts, and therefore warrants some exploration of whether the face-to-face group nature, despite their benefits (i.e., maximise the potential for cognitive dissonance; Stice, Shaw, Becker, & Rhode, 2008), is the most suitable format for young adult females when specifically discussing potentially sensitive concerns regarding weight and appearance. Further research specifically comparing group versus individual delivery of preventive interventions is needed to provide clarification of both qualitative and quantitative aspects and their relation to potential dissemination. As an aside, it is possible that this concern may arise due to cultural differences and therefore be more pertinent to settings outside of the USA. This is supported by the fact that the group nature was also highlighted as a potential contributor for unwillingness to participate in face-to-face group prevention for depression in the Netherlands (Cuijpers et al., 2010) and emphasises the importance of validating interventions in different cultural settings.

In terms of predictors of participation, these results showed that a greater belief in the helpfulness of body image programs in general and higher personal ineffectiveness were predictive of both interest and likelihood of participation in the intervention research trial. The former is perhaps unsurprising, and underlines the importance of being specific about how interventions will help during the marketing and promotion phase and citing evidence of previous success. The latter indicates that those with low self-worth and who feel unable to affect change for themselves

may find the prospect of external assistance attractive. This is inconsistent to some extent with previous studies where lower self-efficacy has predicted poorer treatment outcomes (Pinto, Heinberg, Coughlin, Fava, & Guarda, 2008; Steele, Bergin, & Wade, 2011); however, it could indicate that those who exhibit ineffectiveness may be more likely to sign up for assistance, but less likely to do well overall without emphasis on increasing self-efficacy in the early stages. Interestingly, no body related variables were associated with inclination towards participation, suggesting that successful engagement with the population regarding eating disorder prevention relies on factors aside from simple appeals to the presence of body concern. This is an important finding for both research trials and for later dissemination, with many recruitment and promotional material doing precisely that. These results also revealed a majority belief that altering thoughts and feelings about the body takes a lot of time and effort, and is perhaps an uphill battle when considering the pressure from media and others. So, despite the clear presence of dissatisfaction with body weight and shape in our sample, it appears that until these concerns impact in a functional way they simply are not as influential on action as competing demands of time, effort, and the potential for discomfiture. This is somewhat worrisome given that once reaching levels of functional disturbance, body concerns – and the more serious behaviours that they can lead to – can easily become entrenched and are much less amenable to treatment as time goes on.

When considering these reasons for non-participation, it is important to emphasise that our results reflect the interest and likelihood of participating in a research efficacy trial of two body image programs, rather than of a body image intervention *per se*. When advertising research trials there is some degree of restraint that is required to be exercised with respect to the marketing of such interventions, thus, the flyer promoting the research did not describe the interventions or the

potential benefits of taking part. While it is possible that involvement in research is unattractive for some people, our results indicated that dislike of the research nature and not wanting to be assigned to the control group were not as salient as time and worry about others as reasons for non-participation. Therefore the possibility that better marketing may have resulted in a marked increase in response to the study cannot be discounted. Providing even minimal information regarding intervention content and objectives, as should be standard practice when disseminating validated interventions, could have a beneficial impact on rates of uptake into intervention programs. Thus, the present design may not accurately reflect a base rate of interest in participating in a body image intervention. As such, future efforts at assessing motivation and interest in participation should pay special attention to the marketing of such interventions in order to make them as appealing as possible within the confines of what is permissible in a research framework.

Notwithstanding these issues, it is still worthwhile pursuing additional efforts at maximising engagement and participation. Strategies to even the balance of priorities when considering participation in interventions have included financially compensating people for their involvement (e.g., Stice et al., 2006), or instituting mandated attendance within a participatory approach (e.g., Becker et al., 2010). However, although these strategies may be appropriate under certain circumstances, it becomes much harder when considering delivery when these avenues are not cost-effective or even possible (e.g., no sorority framework exists in Australia). Furthermore, in the case of dissonance-based interventions, it is conceivable that these approaches may also have the counterproductive potential of limiting the effects of cognitive dissonance induced throughout the program, given experimental evidence suggesting that external rewards reduce intrinsic motivation towards change (Deci, Deci, Koestner, & Ryan, 1999). This does not downplay the benefits of such

programs, as they have produced reliable intervention effects to date, but rather serves to provide an opportunity for maximising the effectiveness of such programs. Future research efforts will need to assess this empirically by evaluating comparable interventions with and without incentives or mandated attendance. Consequently, attention must still be paid to increasing individual awareness and motivation towards participation in selective interventions on a self-selected basis.

One approach attempted in this study was to employ an experimental manipulation to induce cognizance of the importance of engaging in efforts to improve body concerns, thereby maximising motivation to participate. Contrary to our hypothesis, there was no difference between those who did and did not undergo the motivational enhancement exercise in terms of interest and likelihood of participation. It is conceivable that the exercise was too short, being just five items and taking no longer than 5 min to complete, although a similarly brief dissonance-based induction has shown measurable effects in previous experimental work (Wade et al., 2009). Alternatively, awareness of the thin-ideal and motivation to actively maintain positive body image may have been evident prior to the exercise thus creating a ceiling effect. Although it is hard to ascertain this potential as we did not use a formal manipulation check, the finding that a majority of participants were engaging in activities they felt helped with body image lends support for this idea. It is also possible that, once again, the costs of participating (e.g., time, embarrassment) simply outweighed any change in motivation that may have been induced.

In addition to the above points, it would also be reasonable to infer that the content of the exercise was simply not powerful enough to elicit motivational change. Although perhaps assisting in creating autonomy by avoiding a sense of coercion, the mostly non-directive nature of the questions primarily garnered current feelings and views which, for some participants, may actually have been in support

of the thin-ideal and reflecting limited value in proactively engaging in body image improvement. A more powerful contributor to increased motivation would likely benefit from refinement of the manipulation, such as employing a stronger motivational interviewing approach to elicit change, as seen in substance abuse applications (e.g., Carroll et al., 2006), or by adopting a targeted cognitive dissonance strategy. In this context, inducing dissonance would include explicitly seeking counter-attitudinal statements against the thin-ideal and could prove beneficial given its successful use in the reduction of risk-factors and future onset for disordered eating (Becker et al., 2010; Matussek et al., 2004; Stice et al., 2006; Wade et al., 2009). Despite the failure of our motivational enhancement approach to increase participation, it represents a very preliminary attempt to systematically increase participation and engagement and one which further research can build upon to ascertain the viability of these kinds of strategies in future.

As mentioned above, these results suggest some strategies that could be employed in the marketing phase to increase voluntary engagement with preventive interventions and therefore enhance in wider dissemination (e.g., providing specific information about the program and its helpfulness). Within the context of the current research, it is reasonable to suggest that a potentially powerful avenue for increased participation is in the refining of delivery to make programs time flexible and avoid possible stigmatisation. Although this would include flexibility in scheduling of any face-to-face contact at a minimum, another promising avenue is that of multimedia packages and online programs. These enable participants to engage with material at their own pace, in their own time, and without the need to discuss intimate issues with strangers. Adding the option of discussion forums, both synchronous and asynchronous, can also provide some of the benefits of a group program without the embarrassment. This is a timely approach given the almost ubiquitous use of digital

and internet technologies in the generation of interest, as well as the encouraging application of internet-based interventions in other mental health contexts (Barak, Hen, Boniel-Nissim, & Shapira, 2008).

Investigations of online eating disorder prevention efforts have already commenced and appear promising with regard to outcomes and acceptability (Bauer & Moessner, 2013). However, these studies are not without their drawbacks, including the provision of financial incentives, extensive time to recruit, potential power issues, and retention and compliance difficulties (Bauer et al., 2009; Lindenberg et al., 2011; Paxton, McLean, Gollings, Faulkner, & Wertheim, 2007; Stice, Rohde, Durant, et al., 2012; Taylor et al., 2006). Additionally, as pointed out by Bauer and Moessner (2013) in their review, this body of work is yet to establish whether online applications do in fact result in greater reach than face-to-face interventions. Consequently, although internet-based interventions appear to be attractive in that they are more easily accessible and potentially cost-effective, it comes with a caveat to undertake concerted efforts to elucidate best practise for implementation and dissemination, engagement and compliance.

Use of the internet to enhance dissemination of prevention in eating disorders can profitably learn from the experiences in other fields, where increased efforts at online recruitment in the area of substance abuse, smoking cessation and depression have resulted in a wider audience. For instance, a recent study for an internet-based indicated intervention for depression recruited 1699 participants over a 14-month period, with no incentives provided (Morgan et al., 2013) using solely internet-based recruitment. However, this does come at some cost when considering the most effective form of recruitment was for paid advertisements, with an average cost of \$12 per participant. Interestingly, Morgan and colleagues found the most effective advertisement invited people to complete a test to see if they had depression (and

then receive help), rather than appeals based on wanting help for depression. This emphasises the importance of becoming strategic and resourceful when marketing interventions, and thus we may benefit from the fields of social and cognitive psychology to understand what factors are most likely to motivate someone to engage and how we can deploy these to advantage those at risk of developing more serious concerns.

In addition to lessening demand on time, reducing stigma is another potentially motivating factor. One means toward this end is to reframe interventions to couch the targeting of body concerns within a more general and potentially more appealing package, such as assisting well-being during commencement of university, or coping with the stresses of transitioning into young adulthood. Moreover, heeding the recommendation to develop and deliver transdiagnostic programs that target multiple mental health concerns with shared risk factors (Cuijpers et al., 2010; Nehmy, 2010; Stice, South, et al., 2012) may provide programs that are more convincing in attracting participants by combining the goals of appealing to more than just body concerns as well as providing the capacity to prevent other potentially distressing concerns.

In summary, although various prevention programs for eating disorders have demonstrated efficacy there is still some work to be achieved in ensuring that these strategies can be disseminated to the population of interest. This is particularly important in prevention work where individuals are not necessarily looking for help, and for young adults in particular, where there is not always an easy avenue for mandatory participation as for high school programs. Our results suggest that increased interest and likelihood of participation in body image interventions may be achieved through reducing the perceived demands on time, re-considering the face-to-face nature of group interventions, highlighting the specific helpfulness of such

programs, and emphasising the opportunity for increased personal effectiveness and self-worth. Future prevention efforts will benefit from consideration of these factors in terms of uptake into programs and therefore overall effectiveness. These findings also highlight the importance of strategic promotion and marketing of interventions, as well as testing interventions across different cultural settings, as these may impact on acceptability of the intervention and its usefulness in different environments.

## Chapter 6.

### **A Cluster Randomised Controlled Trial of Mindfulness and Dissonance-Based Interventions for Reducing the Risk of Disordered Eating in Female High School Students<sup>4</sup>**

#### **6.1 Overview**

This chapter describes a further controlled comparison of the mindfulness-based and dissonance-based interventions outlined in Chapter 4. The purpose of the study was to overcome the limitations of voluntary participation in preventive interventions by adapting the programs for semi-mandatory participation in a high school setting. In accordance with the desire to target females representing the later peak onset period (transitioning into young adulthood), only senior grades (10 to 12) from single sex girls schools were approached to participate. Due to practical and ethical constraints, differences with previous implementations were that the interventions were delivered to large class-based groups as opposed to small groups, and included all students regardless of their level of body concern. In order to approximate and allow comparisons with a selective sample, results are analysed by low and high risk groups with regard to baseline weight concerns.

The primary objective of this study was to evaluate the adapted interventions with respect to reducing key eating disorder risk factors, symptoms and psychosocial impairment. It was hypothesised that participants in both interventions would demonstrate greater improvements across outcomes relative to the control condition. However, it was also expected that intervention effects would be smaller overall

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<sup>4</sup> Various parts of this chapter have been presented by the author at five conferences during 2012 and 2013: 10th Annual Conference, Australian and New Zealand Academy of Eating Disorders (Adelaide, Australia); 18th Annual Meeting, Eating Disorders Research Society (Porto, Portugal); 35th National Conference, Australian Association for Cognitive and Behaviour Therapy (Gold Coast, Australia) International Conference on Eating Disorders, Academy for Eating Disorders (Montreal, Canada); Annual Conference and Workshops, British Association for Behavioural & Cognitive Psychotherapies (London, United Kingdom).

given that universal prevention programs have traditionally achieved smaller effect sizes than for selective prevention (Stice et al., 2007). Furthermore, due to the practical necessity of having multiple facilitators delivering intervention classes concurrently, it was of interest to explore the impact of facilitator. The primary investigator (author) had a greater level of specific knowledge and familiarity with both interventions, and therefore representative of optimal training and experience, that could be hypothesised to translate into greater intervention effects. Therefore intervention effects with respect to the same outcome variables were examined for this facilitator alone. It was intended that any differences detected between classes facilitated by MA and the whole sample would help to refine conclusions regarding facilitator expertise and the efficacy of the interventions.

In addition to intervention effects, a secondary objective was to assess the acceptability of the program among both high school students and their teachers, assessed through qualitative feedback.

## **6.2 Method**

### **6.2.1 Design**

This study used a cluster randomised controlled design whereby classes of students were randomly allocated within year level at each school to either the MBI, DBI or control (lessons as usual) conditions. Repeated self-report measures of outcomes were taken at baseline, post-intervention, 1-month and 6-month follow-up in order to assess intervention impact.

### **6.2.2 Participants**

A total of 379 students aged 14 to 18 ( $M = 15.70$ ,  $SD = 0.77$ ) gave individual and parent opt-in consent to be involved in the study (89.8% of a potential pool of 422 students). Participants were predominantly Caucasian (84%), with the remainder

identifying as Asian (8%), African (1%), or Other (4%). Participants comprised students from four classes of Grade 10 ( $n = 103$ ), 12 classes of Grade 11 ( $n = 234$ ), and 3 classes of Grade 12 students ( $n = 42$ ), from two private and two Catholic girls schools. Of this total sample, 347 students were present at baseline and therefore eligible to be retained in the study (82.2% of the entire pool). According to guidelines for repeated measures designs (Hedeker, Gibbons, & Waternaux, 1999), assuming a small between-group effect size ( $d = 0.3$ ) based on previous school-based universal prevention trials (Richardson & Paxton, 2009; Wilksch & Wade, 2009), a medium correlation between repeated measures, and allowing for 10% attrition due to student absences, an acceptable power of .8 with an alpha of .05 would be achieved with at least 91 participants in each condition (273 in total). Due to an unavoidable limitation of school-based research, student absences resulted in a variable number of participants completing each assessment time point. A flowchart describing participants at each stage can be seen in **Figure 6.2**

### **6.2.3 Procedure**

Schools where only girls were educated, in Adelaide, South Australia, were invited to take part in the study via email and follow-up telephone contact, with four schools willing and able to participate (see **Figure 6.2**). Randomisation of classes to condition was conducted using a computer-generated randomizing sequence. Given the nature of the trial, it was not possible to blind students to their condition. Intervention classes received their allocated program at a rate of one lesson each week for three weeks, while the control classes received lessons taught by their usual class teacher. Four female postgraduate Psychology students delivered the intervention programs, and with the exception of one student, facilitators delivered both interventions. MA (author) provided training for the other facilitators on an individual basis. Training included a 2-hr session to familiarise facilitators with the

intervention protocols, provision of resource materials, and being available to answer and clarify questions as they arose throughout the intervention period. All participants completed questionnaire assessments in class during the week prior to the intervention (baseline), following the end of the program (post-intervention) and on a further two occasions (1-month and 6-month follow-up). Questionnaire data was primarily collected electronically; however, was obtained via hardcopy where there was technical difficulty. Approval for the study was obtained from the Flinders University Social and Behavioural Research Ethics Committee, the Catholic Education Office, and the individual school principals (see Appendix A).

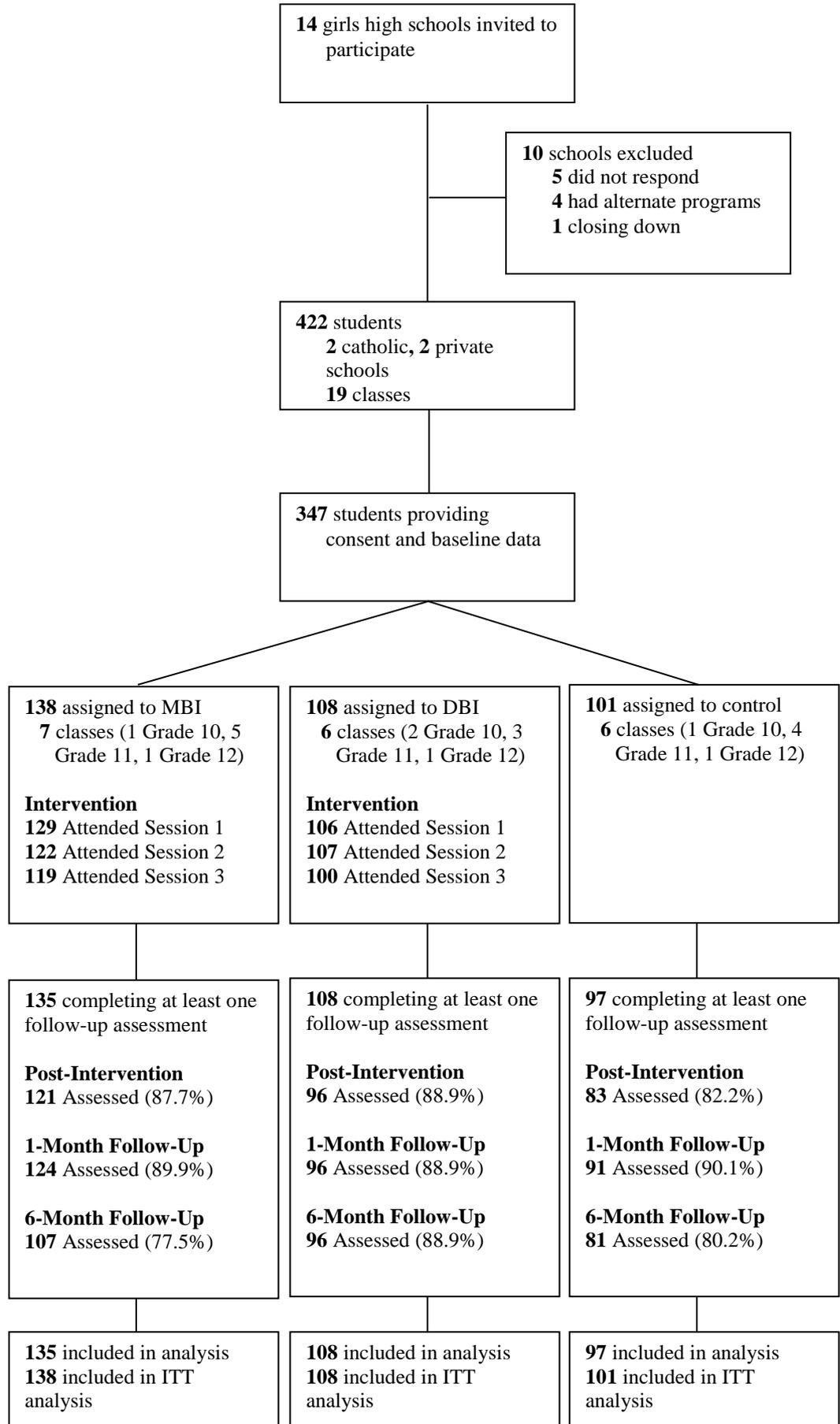


Figure 6.2. Participant flowchart

#### 6.2.4 Interventions

The mindfulness and dissonance-based programs delivered were conceptually the same as those described in Chapter 4; however, some adaptations were made in order to be more appropriate with respect to both age of participants and class-based delivery. Adaptations included the addition of videos and visual slideshows to illustrate key concepts, conducting exercises (such as role-plays) in pairs and groups, and incorporating some homework tasks in class to reduce the homework load. With regard to the mindfulness condition, the STOP method was used in place of the 3-Minute Breathing Space. STOP is an acronym for Stop, Take a Breath, Observe, Proceed, and is detailed in a workbook for Mindfulness Based Stress Reduction (Stahl & Goldstein, 2010). It was deemed to be easier to understand and remember and therefore more age-appropriate for high school students. Intervention components for both programs are outlined in **Table 6.1**.

#### 6.2.5 Measures

Key outcomes for evaluating the impact of the interventions were the same as for the trial involving young adult females (Chapter 4), namely: measures of eating disorder risk factors, symptoms, and psychosocial impairment. Measures described in previous chapters include primary outcomes of weight and shape concern (EDE-Q-WSC; current sample  $\alpha = .95$ ) and negative affect (PANAS-X; current sample  $\alpha = .95$ ), and secondary outcomes of thin-idealisation (SATAQ-3-Internalisation; current sample  $\alpha = .91$ ), sociocultural pressures (SATAQ-3-Pressures; current sample  $\alpha = .92$ ), dietary restraint (DEBQ-R; current sample  $\alpha = .94$ ), emotion regulation (DERS; current sample  $\alpha = .94$ ), avoidant coping style (WOC-EA; current sample  $\alpha = .73$ ), eating disorder symptoms (diagnostic items from the EDE-Q; current sample  $\alpha = .78$ ), and psychosocial impairment (CIA; current sample  $\alpha = .95$ ). As in Chapter 4, primary outcomes were selected on the basis of being the most consistently

replicated and robust predictors of disordered eating (Jacobi & Fittig, 2010).

Additional measures for use in the current adolescent sample included a shorter and more developmentally appropriate measure of mindfulness in place of the FFMQ used in Chapter 4, and a short measure of self-compassion, both of which are described in more detail below, along with assessment of risk and program acceptability.

Table 6.1  
*Intervention Features*

<b>Lesson</b>	<b>Components</b>
<i>Mindfulness-Based Intervention</i>	
<i>Lesson 1</i> Introducing Awareness & Acceptance	1. Common coping strategies: Suppression and magnification exercises <b>2. Video: “Today is a Gift” from Kung Fu Panda</b> <b>3. Slideshow: “Acceptance is Not”</b> 4. Guided exercise: Raisin Exercise <i>Homework:</i> 1. Management strategies worksheet 2. Awareness and acceptance of routine task
<i>Lesson 2</i> A New Way of Relating to Experience	1. Barriers to mindfulness (hand out Hint Cards) 2. De-centring thought exercise 3. Guided exercise: Sitting with magazine images 4. Role-play mindfulness attitude in groups <b>5. STOP Method</b> <i>Homework:</i> 1. STOP practise 2. Awareness of pleasant body experience
<i>Lesson 3</i> Self-compassion and Letting Go	1. Discuss “Guest House” poem in pairs 2. Brainstorm acceptance statements <b>3. Guided exercise: Visualised mirror reflection</b> 4. Future pressures and Personal Action Plan <b>5. Write postcard to younger girl</b> <i>Homework:</i> 1. STOP practise
<i>Dissonance-Based Intervention</i>	
<i>Lesson 1</i> Defining the Thin-Ideal	1. Brainstorm thin-ideal <b>2. Video: Dove Evolutions (air-brushing)</b> <b>3. Examine visual Factsheet</b> 4. Small group discussions: Costs of thin-ideal <b>5. Video: Little girl doing affirmation in mirror</b> <i>Homework:</i> 1. Self-affirmation mirror task
<i>Lesson 2</i> Resisting Pressures to be Thin	1. Mirror review 2. Write email to younger girl about costs 3. Role-plays: Verbal challenges to thin-ideal <i>Homework:</i> 1. Top-10 List (Body Activism)
<i>Lesson 3</i> Body Activism	1. Role-plays: Quick comebacks to thin-ideal 2. Discuss behavioural challenge 3. Discuss body activism 4. Future pressures and Response plan <i>Homework:</i> 1. Behavioural challenge 2. Body activism challenge

Note: Items specific to high school adaptation highlighted in bold.

**6.2.5.1 Mindfulness.** The Child and Adolescent Mindfulness Measure (CAMM; Greco, Baer, & Smith, 2011) consists of 10 items and assesses mindfulness specifically for school-aged children and adolescents. Participants use a 5-point rating scale (*never true* to *always true*) to indicate how often each statement is true of them (e.g., ‘I tell myself that I shouldn’t feel the way I’m feeling.’) All items were reverse scored and a total mean score calculated with higher scores reflecting higher mindfulness.

Items selected for the CAMM were based on key mindfulness constructs also reflected in the Five Factor Mindfulness Questionnaire (FFMQ) described in Chapter 4: Observing, Acting with Awareness, and Non-judgement. It was developed and validated across four studies of adolescents (Greco et al., 2011). The authors report an adequate level of internal consistency ( $\alpha = .81$ ), and demonstrated positive correlations with academic competence, social skills, and quality of life; and negative correlations with somatic complaints, internalising symptoms and behavioural complaints. Similar findings were reported in a recent validation study using a Dutch version of the CAMM (Bruin, Zijlstra, & Bögels, 2013), which reported an acceptable internal consistency ( $\alpha = .80$ ), positive associations with happiness, self-regulation, and quality of life, and negative associations with stress, rumination, and catastrophising. The current sample demonstrated an internal consistency of .89.

**6.2.5.2 Self-compassion.** The short form of the Self Compassion Scale (SCS-SF; Raes, Pommier, Neff, & Van Gucht, 2011) was used to assess self-compassion. The Short Form (12 items instead of 26 items) was administered in order to reduce responder burden, and consists of two items for each key concept of self-kindness (e.g., ‘I try to be understanding and patient towards those aspects of my personality I don’t like’), self-judgment (e.g., ‘I’m disapproving and judgmental about my own flaws and inadequacies’), common humanity (e.g., ‘I try to see my

failings as part of the human condition’), isolation (e.g., ‘When I fail at something that’s important to me, I tend to feel alone in my failure’), mindfulness (e.g., ‘When something painful happens I try to take a balanced view of the situation’), and over-identification (e.g., ‘When I’m feeling down I tend to obsess and fixate on everything that’s wrong’). Participants were asked to indicate how often they behaved in the stated manner on a 5-point scale (*almost never* to *almost always*). Items for self-judgment, isolation, and over-identification were reverse scored and a mean total score calculated with higher scores reflecting greater self-compassion.

Validation of the SCS-SF was undertaken using both Dutch and English samples of predominantly university students (Raes et al., 2011). The authors report acceptable internal consistency ( $\alpha \geq .86$  across samples) and a high correlation with the long form SCS (Neff, 2003;  $r \geq .97$ ). However, although the same six-factor structure was obtained as for the long form, the individual subscales were generally less reliable and therefore use of the total score was recommended. Although not specifically validated with adolescents, the long form has shown internal consistency with an adolescent sample ( $\alpha = .90$ ). Consistency in the current sample was satisfactory ( $\alpha = .79$ ).

**6.2.5.4 Risk Status.** In order to determine whether the impact of interventions was different for those considered at risk for the development of disordered eating, the level of weight concerns at baseline was used to assign risk status. As for the studies described in Chapters 4 and 5, the short 5-item WCS was used to determine risk. Although a total cut-off  $\geq 50$  was adopted in the previous studies, a value of  $\geq 57$  was used in the current sample given the high prevalence of weight dissatisfaction in this age group and the desire to capture those at ‘high risk’. A cut-off of 57 represents the upper quartile of scores and has shown to be predictive of the development of eating disorders among adolescents, reported in a study of

eating disorder screening measures (Jacobi, Abascal, et al., 2004).

**6.2.5.6 Program Acceptability. Students.** As similarly conducted for the intervention study outlined in Chapter 4, program acceptability was assessed at post-intervention by having students rate the program they received using separate 5-point scales (*not at all to very much*) with regard to subjective feelings of improvement in body image, enjoyment, amount of attention paid, extent of homework completed, facilitator confidence, understanding of concepts, ease of use, effectiveness, and likelihood of continued use. Students also gave free report responses regarding aspects they liked and disliked about the program. At all follow-up assessments, intervention participants were asked to indicate how much time they had spent using the techniques on a 5-point scale (*not at all to a lot*) and any reasons for not using the techniques.

**6.2.5.6.2 Teachers.** Staff members were also asked to complete a qualitative evaluation of the program. This included questions regarding aspects of the program they felt were most positive, relevant to students, and those already covered in the school curriculum. They were also asked what aspects could be improved and how confident they would be in teaching the program themselves after appropriate training.

## **6.2.6 Statistical Analysis**

All analyses were again conducted using IBM SPSS, version 19 (IBM Corp., 2010).

**6.2.6.1 Data preparation and baseline analysis.** Consistent with previous chapters, data screening was conducted according to recommendations by Tabachnick and Fidell (2013). Normality distributions and outliers for each outcome variable across time and condition were examined prior to commencing analysis. Square root (dietary restraint, emotion regulation difficulties), log (negative affect,

eating disorder symptoms), and inverse transformations (BMI, psychosocial impairment) were applied to account for positive skewness. A reverse log transformation was applied to mindfulness to account for negative skewness. A univariate outlier for self-compassion (control group) was transformed to be one unit larger than the next highest score. Two cases from the MBI group were identified as multivariate outliers and were removed from further analyses to reduce potential bias.

Baseline differences between the three experimental conditions were assessed using univariate analysis of variance (ANOVA) for each outcome variable. Differences between the two interventions for each aspect of program acceptability, and time spent using the techniques, were assessed using independent sample t-tests.

**6.2.6.2 Intervention analyses.** Intervention effects for each outcome variable were assessed using linear mixed model analyses in order to retain participants who had missing data for follow-up assessments. As described in Chapter 4, baseline observations were used as covariates to eliminate the influence of baseline variability, resulting in a 3 (condition: MBI, DBI, control) X 3 (time: post-intervention, 1-month, 6-month) X 2 (risk status: low, high) fixed effects model for each outcome variable, with random effects accounting for individual, class and school variation. However, the intraclass correlations were very small for class (<.03) and school (<.01) and their inclusion did not significantly improve the fit of the models, thus they were removed from the final models. Significant main effects of condition as well as interactions between condition and time are thus indicators of intervention effects. Additional analysis was also undertaken to assess a full intention-to-treat (ITT) approach, as described in Chapter 4. Missing data for individual variables at baseline (1-2% across variables) was again imputed using the Expectation-Maximization algorithm in SPSS.

Post-hoc analyses were conducted to assess the differential impact of condition on outcome variables at each post-intervention follow-up, with pairwise comparisons indicating specific group differences. A Bonferroni adjustment was applied to account for multiple comparisons. Effect sizes for between-group pairwise comparisons were calculated using Cohen's  $d$ , where the difference in means between conditions was divided by the pooled standard deviation using the formula described in Chapter 4.

**6.2.6.4 Clinical significance.** Clinical significance of change was reflected by large within-group effect sizes ( $\geq .8$ ), as well as significant changes from baseline to final follow-up based on reliable change indices. Within-group effect sizes were calculated using Cohen's  $d$ , where the difference in means between the two time-points was divided by the pooled standard deviation of all conditions at baseline. Reliable change indices (RCI) were again calculated using the formula  $RCI = M_2 - M_1 / \sqrt{2(SD^2(1-r))}$  outlined in Chapter 4. RCIs exceeding 1.96 were deemed to indicate statistically reliable change with 95% confidence. Estimations of likelihood ratios derived from Chi-square analyses assessed the number of people demonstrating reliable improvement in the intervention groups relative to the control group.

## 6.3 Results

### 6.3.1 Preliminary Analyses

**6.3.1.1 Program Participation.** Student absences resulted in some participants failing to attend all intervention lessons; however, similar rates of attendance were observed for both interventions. For the MBI group, attendance was 90.7%, 86.4%, and 84.3% for the three lessons, respectively, with 67.1% of students attending all three lessons. For the DBI group, attendance was 86.1%, 86.9%, and 81.1%, with 63.9% attending all three lessons.

### 6.3.1.2 Baseline data.

Due to the exclusion of two cases identified as multivariate outliers, 345 participants were available for analysis. Baseline body mass index (BMI) ranged from 14.95 to 38.06 ( $M = 20.76$ ,  $SD = 2.91$ ); however, it should be noted that a relatively high proportion of students failed to give data for height and weight (14.2% and 17.7%, respectively), which is a limitation of using self-report BMI data. Overall, students reported a mean of 2.69 ( $SD = 1.71$ ) on weight and shape concerns, reflecting a response category between *slightly* and *moderately*. Additionally, 103 (29.9%) were classified as high risk due to having high levels of weight concern ( $WCS \geq 57$ ). Consistent with this, the high risk group reported a level of weight and shape concerns on the EDE-Q associated with clinical severity ( $M = 4.29$ ,  $SD = 1.17$ ). Means and standard deviations for all outcome variables by condition, time, and risk status are displayed in **Table 6.2**. No significant differences between conditions were revealed with respect to BMI or any outcome variable, all  $p > .2$ .

**6.3.1.3 Intervention validity.** As for the evaluation with young adults (Chapter 4), changes in the measure of mindfulness were examined to ascertain whether the mindfulness-based intervention was operating via an increase in non-judgemental awareness and acceptance as theorised. Results of a linear mixed model analysis controlling for baseline assessment indicated no significant effects of condition ( $F = 1.00$ ,  $p = .368$ ), of differences between conditions over time ( $F = .932$ ,  $p = .445$ ), or of differences between conditions over time with respect to risk status ( $F = .932$ ,  $p = .445$ ), on levels of mindfulness. A significant main effect of time ( $F = 6.36$ ,  $p = .002$ ) indicated an overall increase in mindfulness (i.e., irrespective of condition and risk status) from post-intervention to 1-month follow-up but not maintained at 6-month follow-up. Examination of within-group changes for the MBI group reflected small to moderate size effects for improvements in

mindfulness from baseline to post-intervention, to 1-month, and to 6-month, among low risk participants ( $d = 0.33$ ,  $d = 0.56$ ,  $d = 0.42$ , respectively) and smaller effects among high risk participants ( $d = 0.38$ ,  $d = 0.22$ ,  $d = 0.22$ ). However, small effect sizes were also found for the DBI group among low risk participants ( $d = 0.24$ ,  $d = 0.35$ ,  $d = 0.28$ ), although no improvements were found among high risk participants ( $d = -0.17$ ,  $d = 0.13$ ,  $d = 0.00$ ). Effects for the control group were variable for both low risk ( $d = 0.00$ ,  $d = 0.21$ ,  $d = 0.10$ ) and high risk ( $d = -0.21$ ,  $d = 0.30$ ,  $d = 0.07$ ) groups. Together, these results suggest that the mindfulness-based intervention demonstrated limited superiority over the comparison conditions with respect to improvements in mindful awareness and acceptance.

Table 6.2

*Means (and Standard Deviations) for Outcome Measures by Condition, Time and Risk Status*

Variable	Low Risk ( <i>n</i> = 242)				High Risk ( <i>n</i> = 103)			
	Baseline <i>M</i> ( <i>SD</i> )	Post <i>M</i> ( <i>SD</i> )	1-month <i>M</i> ( <i>SD</i> )	6-month <i>M</i> ( <i>SD</i> )	Baseline <i>M</i> ( <i>SD</i> )	1-month <i>M</i> ( <i>SD</i> )	6-month <i>M</i> ( <i>SD</i> )	6-month <i>M</i> ( <i>SD</i> )
<i>Primary outcomes</i>								
Weight & Shape Concerns								
Control	2.00 (1.49)	1.89 (1.55)	1.77 (1.51)	1.89 (1.90)	4.22 (1.27)	3.92 (1.67)	3.74 (1.41)	3.75 (1.40)
MBI	2.25 (1.50)	2.00 (1.57)	1.64 (1.43)	1.81 (1.58)	4.37 (1.14)	4.13 (1.42)	3.93 (1.43)	3.81 (1.83)
DBI	1.69 (1.20)	1.52 (1.21)	1.19 (1.10)	1.46 (1.23)	4.25 (1.15)	3.91 (1.33)	3.28 (1.68)	3.68 (1.34)
Weight Concern (Screen)								
Control	27.50 (15.66)	31.70 (21.79)	32.96 (20.72)	34.86 (25.25)	71.59 (12.43)	66.44 (15.63)	60.35 (15.52)	60.48 (18.53)
MBI	31.51 (15.06)	29.02 (19.78)	27.12 (18.08)	30.61 (21.69)	70.22 (9.64)	65.21 (13.45)	62.46 (15.00)	60.60 (20.24)
Dissonance	29.62 (14.50)	28.07 (17.06)	23.92 (14.64)	28.27 (16.34)	70.41 (10.5)	59.41 (15.81)	55.56 (20.83)	59.28 (18.51)
Negative Affect								
Control	2.05 (0.86)	2.28 (1.04)	2.01 (0.89)	2.15 (0.92)	2.42 (0.82)	2.26 (0.87)	2.27 (0.81)	2.42 (0.94)
MBI	2.04 (0.88)	2.04 (0.88)	1.88 (0.85)	2.15 (0.89)	2.81 (1.08)	2.66 (0.93)	2.78 (1.19)	2.80 (1.16)
DBI	1.92 (0.75)	1.88 (0.68)	1.79 (0.79)	1.82 (0.76)	2.52 (0.97)	2.89 (1.19)	2.66 (1.23)	2.84 (1.06)
<i>Secondary outcomes</i>								
Dietary restraint								
Control	1.93 (0.81)	1.98 (0.99)	1.92 (0.93)	2.09 (1.23)	3.42 (0.90)	2.94 (0.83)	2.91 (0.90)	2.80 (0.84)
MBI	2.17 (0.87)	1.91 (0.91)	1.85 (0.89)	1.84 (0.92)	3.68 (0.83)	3.31 (0.96)	3.18 (0.98)	3.04 (1.25)
DBI	1.93 (0.73)	1.76 (0.79)	1.59 (0.70)	1.67 (0.76)	3.37 (0.70)	3.03 (0.96)	2.87 (1.11)	2.92 (1.20)
Thin-ideal internalisation								
Control	3.01 (1.03)	2.92 (0.95)	2.92 (0.97)	3.05 (1.03)	4.06 (0.82)	3.70 (0.90)	3.52 (0.90)	3.69 (0.92)
MBI	3.05 (1.01)	2.82 (0.99)	2.86 (0.95)	2.96 (1.07)	3.89 (0.68)	3.68 (0.89)	3.58 (0.76)	3.55 (0.94)
DBI	3.11 (0.85)	3.05 (0.93)	2.97 (0.87)	3.05 (0.77)	3.70 (0.75)	3.52 (0.95)	3.43 (0.77)	3.37 (0.98)

Note. Sample sizes for low and high risk groups, respectively, by condition: Control, *n* = 71 & 30; MBI, *n* = 97 & 39; DBI, *n* = 74 & 34

Table 6.2 (continued)

*Means (and Standard Deviations) for Outcome Measures by Condition, Time and Risk Status*

Variable	Low Risk ( <i>n</i> = 242)				High Risk ( <i>n</i> = 103)			
	Baseline	Post	1-month	6-month	Baseline	1-month	6-month	6-month
	<i>M</i> ( <i>SD</i> )	<i>M</i> ( <i>SD</i> )	<i>M</i> ( <i>SD</i> )	<i>M</i> ( <i>SD</i> )	<i>M</i> ( <i>SD</i> )	<i>M</i> ( <i>SD</i> )	<i>M</i> ( <i>SD</i> )	<i>M</i> ( <i>SD</i> )
Sociocultural pressures								
Control	2.81 (1.07)	2.76 (1.03)	2.70 (0.99)	2.95 (1.07)	3.92 (0.71)	3.51 (1.00)	3.39 (0.97)	3.53 (1.00)
MBI	2.88 (1.02)	2.64 (1.01)	2.67 (0.96)	2.73 (1.08)	3.64 (0.79)	3.37 (1.14)	3.26 (0.90)	3.13 (1.24)
DBI	2.80 (0.84)	2.68 (0.91)	2.61 (0.85)	2.66 (0.91)	3.51 (0.82)	3.28 (0.94)	3.08 (1.03)	3.14 (1.14)
Self-Compassion								
Control	2.87 (0.61)	3.03 (0.60)	3.13 (0.44)	3.08 (0.48)	2.58 (0.72)	2.62 (0.60)	2.69 (0.60)	2.78 (0.71)
MBI	2.84 (0.59)	2.99 (0.65)	2.98 (0.57)	2.97 (0.61)	2.30 (0.60)	2.60 (0.64)	2.48 (0.76)	2.56 (0.80)
DBI	2.86 (0.60)	2.92 (0.59)	3.01 (0.55)	2.91 (0.55)	2.51 (0.52)	2.64 (0.61)	2.87 (0.70)	2.71 (0.55)
Emotion Dysregulation								
Control	2.45 (0.70)	2.47 (0.73)	2.37 (0.61)	2.42 (0.66)	2.72 (0.66)	2.58 (0.67)	2.54 (0.59)	2.64 (0.79)
MBI	2.52 (0.69)	2.44 (0.70)	2.34 (0.63)	2.41 (0.71)	3.01 (0.83)	2.78 (0.78)	2.90 (0.86)	3.05 (0.91)
DBI	2.47 (0.58)	2.35 (0.56)	2.27 (0.55)	2.36 (0.53)	2.80 (0.65)	2.95 (0.80)	2.83 (0.72)	2.94 (0.64)
Escape-Avoidant Coping								
Control	2.24 (0.62)	2.23 (0.72)	2.09 (0.7)	1.96 (0.71)	2.54 (0.50)	2.36 (0.7)	2.14 (0.59)	2.36 (0.63)
MBI	2.23 (0.66)	2.03 (0.7)	1.95 (0.6)	2.01 (0.69)	2.49 (0.60)	2.41 (0.7)	2.32 (0.62)	2.47 (0.84)
DBI	2.27 (0.46)	2.06 (0.63)	2.03 (0.6)	2.03 (0.62)	2.46 (0.66)	2.53 (0.82)	2.4 (0.77)	2.39 (0.66)
ED symptoms								
Control	-0.23 (0.48)	-0.17 (0.50)	-0.14 (0.62)	-0.14 (0.70)	0.45 (0.59)	0.44 (0.63)	0.40 (0.45)	0.38 (0.54)
MBI	-0.14 (0.57)	-0.16 (0.55)	-0.18 (0.51)	-0.18 (0.50)	0.71 (0.53)	0.63 (0.59)	0.64 (0.70)	0.62 (0.83)
DBI	-0.36 (0.34)	-0.36 (0.34)	-0.37 (0.35)	-0.35 (0.33)	0.43 (0.39)	0.36 (0.52)	0.38 (0.74)	0.42 (0.59)
Psychosocial Impairment								
Control	1.35 (0.44)	1.55 (0.75)	1.50 (0.73)	1.58 (0.82)	2.01 (0.59)	2.00 (0.63)	1.88 (0.66)	1.92 (0.69)
MBI	1.42 (0.50)	1.43 (0.56)	1.37 (0.48)	1.41 (0.60)	2.37 (0.70)	2.19 (0.82)	2.30 (0.80)	2.17 (0.84)
DBI	1.32 (0.43)	1.33 (0.38)	1.26 (0.39)	1.31 (0.39)	2.09 (0.71)	2.22 (1.00)	2.03 (0.91)	2.18 (0.82)

Note. Sample sizes for low and high risk groups, respectively, by condition: Control, *n* = 71 & 30; MBI, *n* = 97 & 39; DBI, *n* = 74 & 34

### 6.3.2 Intervention Effects on Outcome Measures

Covariate-adjusted means and standard errors for all outcome variables at post-intervention and follow-up assessments, by condition and risk status, are presented in **Table 6.3**. Results of the linear mixed models are shown in **Table 6.4**, with key findings described below.

**6.3.2.1 Main effects.** A main effect of condition was found for the screening measure of weight concerns, with participants in the DBI condition showing lower scores than the control group across all post-intervention time-points ( $p = .009$ ;  $d = 0.38$ , 95% CI [0.12, 0.63]). Main effects of time, indicating changes over time collapsed across condition and risk status, were found for the screening measure of weight concerns, weight and shape concerns, eating disorder symptoms, dietary restraint, emotion regulation difficulties, and escape-avoidant coping. With the exception of emotion regulation difficulties, pairwise comparisons between time points showed a pattern of reductions from post-intervention to 1-month follow-up, but fading by 6-month follow-up. For emotion regulation difficulties, participants demonstrated a significant increase in scores from 1-month to 6-month follow-up.

**6.3.2.2 Interaction effects.** A significant three-way interaction between condition, time, and risk status was revealed for the screening measure of weight concerns, indicating that the pattern of results over time was different for low risk compared to high risk participants. A significant two-way interaction between condition and risk status was revealed for negative affect, indicating that intervention impact collapsed across all post-intervention time points differed between low and high risk participants. Interactions are graphed in **Figure 6.3** to **Figure 6.5**. No higher-order interactions for secondary outcomes were significant.

Table 6.3

*Adjusted Means (and Standard Errors) of Outcome Measures By Condition, Time, And Risk Status, Controlling for Baseline*

Variable	Baseline	Low Risk (n = 242)			High Risk (n = 103)		
	Covariate	Post	1-month	6-month	Post	1-month	6-month
	M	M (SE)	M (SE)	M (SE)	M (SE)	M (SE)	M (SE)
<i>Primary outcomes</i>							
Weight & Shape Concerns	2.63						
Control		2.46 (0.15)	2.20 (0.14)	2.38 (0.15)	2.89 (0.22)	2.53 (0.22)	2.60 (0.23)
MBI		2.39 (0.12)	1.98 (0.12)	2.22 (0.13)	2.88 (0.20)	2.74 (0.20)	2.57 (0.20)
DBI		2.23 (0.14)	1.99 (0.14)	2.23 (0.14)	2.73 (0.21)	2.18 (0.21)	2.52 (0.21)
Weight Concerns (Screen)	41.55						
Control		45.06 (2.00)	44.76 (1.93)	47.16 (1.98)	40.97 (3.12)	33.32 (3.06)	34.49 (3.25)
MBI		38.94 (1.61)	37.18 (1.57)	41.51 (1.68)	40.51 (2.80)	37.18 (2.83)	34.42 (2.76)
DBI		38.55 (1.79)	36.36 (1.81)	39.35 (1.85)	34.39 (2.88)	30.06 (2.89)	33.91 (2.93)
Negative Affect <sup>±</sup>	0.30						
Control		0.34 (0.02)	0.29 (0.02)	0.31 (0.02)	0.30 (0.03)	0.30 (0.03)	0.31 (0.03)
MBI		0.30 (0.02)	0.26 (0.02)	0.31 (0.02)	0.31 (0.03)	0.33 (0.03)	0.33 (0.03)
DBI		0.28 (0.02)	0.26 (0.02)	0.26 (0.02)	0.36 (0.03)	0.32 (0.03)	0.36 (0.03)
<i>Secondary outcomes</i>							
Dietary restraint <sup>±</sup>	1.53						
Control		1.48 (0.03)	1.45 (0.03)	1.48 (0.03)	1.52 (0.05)	1.47 (0.05)	1.46 (0.06)
MBI		1.40 (0.03)	1.39 (0.03)	1.39 (0.03)	1.57 (0.05)	1.52 (0.05)	1.44 (0.05)
DBI		1.40 (0.03)	1.36 (0.03)	1.39 (0.03)	1.51 (0.05)	1.44 (0.05)	1.47 (0.05)
Thin-ideal internalisation	3.28						
Control		3.15 (0.09)	3.08 (0.09)	3.25 (0.09)	3.19 (0.14)	2.97 (0.14)	3.18 (0.15)
MBI		3.06 (0.08)	3.04 (0.07)	3.20 (0.08)	3.24 (0.12)	3.14 (0.12)	3.04 (0.13)
DBI		3.13 (0.09)	3.12 (0.09)	3.25 (0.09)	3.27 (0.12)	3.15 (0.13)	3.02 (0.13)

Note. Sample sizes for low and high risk groups, respectively, by condition: Control, n = 71 & 30; MBI, n = 97 & 39; DBI, n = 74 & 34

Table 6.3 (continued)

*Adjusted Means (and Standard Errors) of Outcome Measures By Condition, Time, And Risk Status, Controlling for Baseline*

Variable	Baseline	Low Risk (n = 242)			High Risk (n = 103)		
	Covariate	Post	1-month	6-month	Post	1-month	6-month
	M	M (SE)	M (SE)	M (SE)	M (SE)	M (SE)	M (SE)
Sociocultural pressures	3.07						
Control		2.98 (0.10)	2.87 (0.10)	3.20 (0.10)	2.95 (0.16)	2.78 (0.16)	3.01 (0.17)
MBI		2.81 (0.09)	2.83 (0.08)	2.96 (0.09)	2.95 (0.14)	2.82 (0.14)	2.71 (0.14)
DBI		2.84 (0.10)	2.85 (0.10)	2.93 (0.10)	2.92 (0.14)	2.77 (0.14)	2.73 (0.15)
Self-Compassion	2.73						
Control		2.94 (0.07)	3.04 (0.07)	3.00 (0.07)	2.68 (0.10)	2.79 (0.10)	2.82 (0.11)
MBI		2.88 (0.06)	2.90 (0.05)	2.91 (0.06)	2.85 (0.09)	2.73 (0.09)	2.81 (0.09)
DBI		2.86 (0.06)	2.91 (0.06)	2.80 (0.06)	2.80 (0.09)	3.01 (0.09)	2.85 (0.10)
Emotion Dysregulation <sup>±</sup>	1.59						
Control		1.59 (0.02)	1.57 (0.02)	1.57 (0.02)	1.58 (0.03)	1.56 (0.03)	1.60 (0.03)
MBI		1.57 (0.02)	1.54 (0.02)	1.56 (0.02)	1.56 (0.03)	1.59 (0.03)	1.63 (0.03)
DBI		1.54 (0.02)	1.53 (0.02)	1.55 (0.02)	1.63 (0.03)	1.59 (0.03)	1.65 (0.03)
Escape-Avoidant Coping	2.31						
Control		2.32 (0.08)	2.15 (0.08)	2.07 (0.08)	2.23 (0.11)	2.01 (0.11)	2.16 (0.12)
MBI		2.12 (0.06)	2.03 (0.06)	2.05 (0.07)	2.26 (0.10)	2.19 (0.10)	2.38 (0.10)
DBI		2.09 (0.07)	2.06 (0.07)	2.07 (0.07)	2.39 (0.10)	2.26 (0.11)	2.34 (0.11)
ED symptoms	0.22						
Control		0.22 (0.01)	0.19 (0.01)	0.20 (0.01)	0.24 (0.02)	0.22 (0.02)	0.22 (0.02)
MBI		0.20 (0.01)	0.18 (0.01)	0.19 (0.01)	0.25 (0.02)	0.24 (0.02)	0.21 (0.02)
DBI		0.18 (0.01)	0.17 (0.01)	0.18 (0.01)	0.22 (0.02)	0.20 (0.02)	0.22 (0.02)
Psychosocial Impairment	0.29						
Control		0.31 (0.02)	0.29 (0.02)	0.31 (0.02)	0.33 (0.04)	0.29 (0.03)	0.31 (0.04)
MBI		0.26 (0.02)	0.25 (0.02)	0.26 (0.02)	0.31 (0.03)	0.35 (0.03)	0.28 (0.03)
DBI		0.26 (0.02)	0.23 (0.02)	0.26 (0.02)	0.34 (0.03)	0.28 (0.03)	0.37 (0.03)

Note. Sample sizes for low and high risk groups, respectively, by condition: Control, n = 71 &amp; 30; MBI, n = 97 &amp; 39; DBI, n = 74 &amp; 34

Table 6.4  
*Main and Interaction Effects of Condition, Time, and Risk Status*

<b>Variable</b>	<b>F</b>	<b>df</b>	<b>p</b>
<i>Primary outcomes</i>			
Weight & Shape Concerns			
Cond	1.11	2, 334.73	.330
Time	12.43	2, 544.52	.000
Time x Condition	0.65	4, 544.42	.628
Risk x Condition	0.43	2, 334.90	.653
Time x Condition x Risk	1.10	6, 544.32	.364
Weight Concerns (screen)			
Cond	4.55	2, 330.71	.011*
Time	7.60	2, 413.47	.001**
Time x Condition	0.51	4, 413.73	.726
Risk x Condition	2.24	2, 330.60	.108
Time x Condition x Risk	2.64	6, 413.43	.016*
Negative Affect			
Cond	0.01	2, 312.15	.988
Time	2.67	2, 429.54	.070
Time x Condition	0.34	4, 432.17	.850
Risk x Condition	3.17	2, 312.03	.043*
Time x Condition x Risk	1.10	6, 430.20	.359
<i>Secondary outcomes</i>			
Dietary restraint			
Cond	1.26	2, 320.76	.285
Time	3.96	2, 403.85	.020*
Time x Condition	0.76	4, 404.05	.553
Risk x Condition	1.39	2, 321.05	.251
Time x Condition x Risk	0.96	6, 403.81	.452
Thin-ideal Internalisation			
Cond	0.10	2, 317.23	.909
Time	2.30	2, 422.76	.101
Time x Condition	0.70	4, 423.56	.591
Risk x Condition	0.14	2, 317.18	.870
Time x Condition x Risk	1.70	6, 423.28	.119
Sociocultural pressures			
Cond	0.99	2, 306.00	.375
Time	2.17	2, 417.61	.115
Time x Condition	1.28	4, 418.34	.278
Risk x Condition	0.06	2, 305.74	.944
Time x Condition x Risk	1.10	6, 418.41	.364
Emotion Dysregulation			
Cond	0.03	2, 311.46	.975
Time	4.75	2, 408.27	.009*
Time x Condition	0.63	4, 412.28	.638
Risk x Condition	2.08	2, 311.43	.126
Time x Condition x Risk	1.67	6, 409.00	.127

\*\*  $p < .01$ , \*  $p < .05$

Table 6.4 (continued)

*Main and Interaction Effects of Condition, Time, and Risk Status*

<b>Variable</b>	<b>F</b>	<b>df</b>	<b>p</b>
Escape-Avoidant Coping			
Cond	0.22	2, 316.06	.800
Time	4.21	2, 437.90	.015*
Time x Condition	0.86	4, 439.26	.488
Risk x Condition	2.59	2, 316.18	.076
Time x Condition x Risk	0.86	6, 438.49	.521
Self-Compassion			
Cond	0.17	2, 307.20	.842
Time	1.48	2, 408.72	.228
Time x Condition	2.12	4, 410.93	.078
Risk x Condition	1.98	2, 307.27	.139
Time x Condition x Risk	0.64	6, 409.61	.696
ED symptoms			
Cond	0.94	2, 320.58	.391
Time	4.06	2, 373.77	.018*
Time x Condition	0.65	4, 374.45	.626
Risk x Condition	0.38	2, 320.98	.687
Time x Condition x Risk	0.54	6, 374.21	.776
Clinical Impairment			
Cond	0.44	2, 320.86	.647
Time	1.89	2, 445.07	.152
Time x Condition	2.14	4, 451.79	.075
Risk x Condition	1.60	2, 321.21	.204
Time x Condition x Risk	1.03	6, 446.57	.403

\*\*  $p < .01$ , \*  $p < .05$

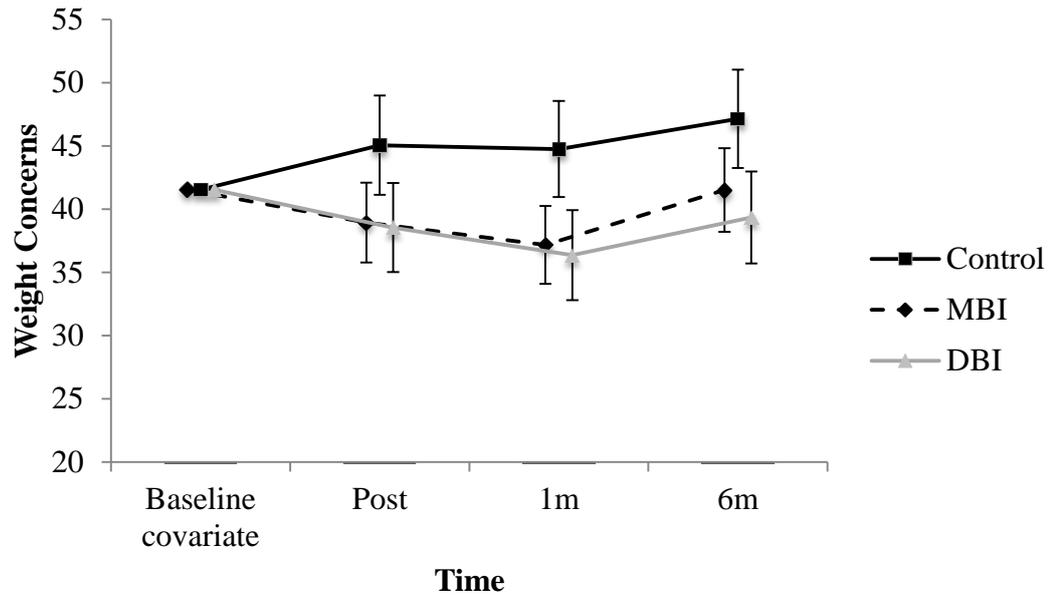


Figure 6.3. Weight Concerns (Screen) over time, by condition, among low risk participants. Error bars represent 95% confidence intervals.

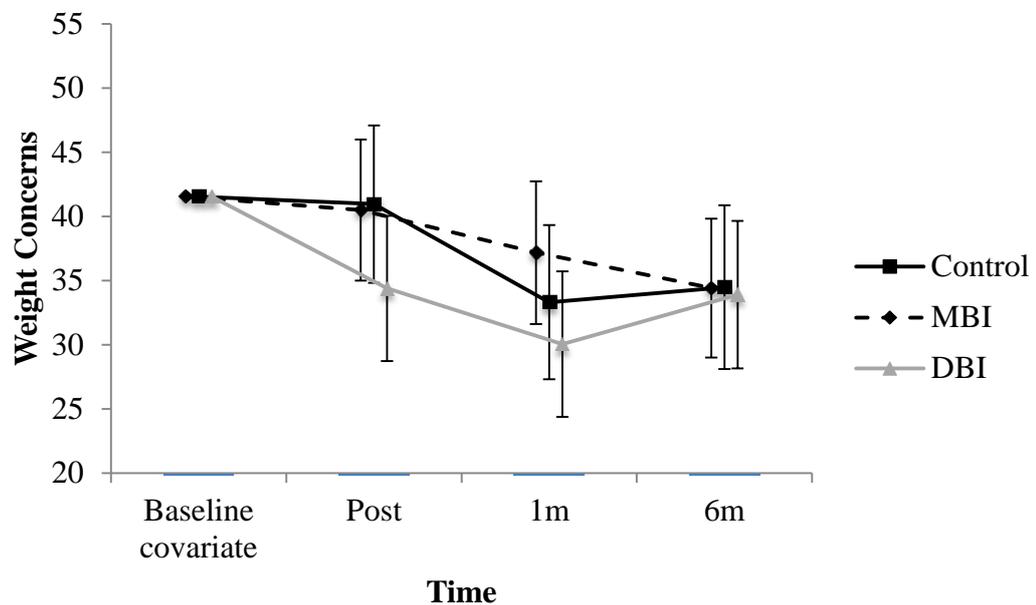


Figure 6.4. Weight Concerns (Screen) over time, by condition, among high risk participants. Error bars represent 95% confidence intervals.

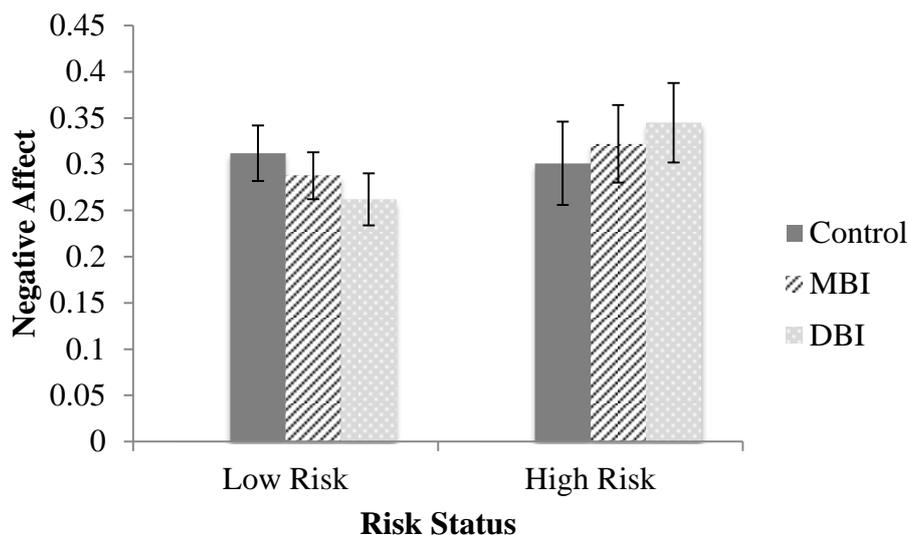


Figure 6.5. Negative affect across time points by low and high risk status, adjusted for baseline covariate of .30. Error bars represent 95% confidence intervals.

#### 6.3.2.2.1 *Post-hoc analyses.* Post-hoc testing on intervention effects

assessed the simple effects of condition at each post-intervention time point and level of risk status, with Bonferroni-adjusted pairwise comparisons indicating specific differences between conditions. **Table 6.5** displays effect sizes (Cohen's  $d$ ), with 95% confidence intervals, for all pairwise comparisons of conditions. Only those indicated by significant effects of condition are discussed below in order to avoid over-interpretation.

6.3.2.2.1.1 *Primary outcomes.* Regarding the screening measure of weight concerns, effects of condition were found among low risk participants at post-intervention [ $F(2,638.89) = 4.12, p = .017$ ], 1-month follow-up [ $F(2, 625.18) = 7.01, p = .001$ ], and 6-month follow-up [ $F(2,661.78) = 4.93, p = .007$ ]. Specifically, pairwise comparisons showed that both the MBI and DBI produced greater improvements in weight concerns with respect to the control group at post-intervention and 1-month follow-up; however, only DBI participants remained

significantly lower than control at 6-month follow-up (**Table 6.5**). Among high risk participants, however, conditions did not differ significantly at any assessment point (post-intervention:  $F(2, 638.94) = 2.05, p = .129$ ; 1-month:  $F(2, 644.95) = 2.04, p = .131$ ; 6-month:  $F(, 657.99) = 0.02, p = .985$ ). This pattern was not reflected with the longer measure of both weight and shape concerns, where no significant effects were detected.

With respect to negative affect, a simple effect of condition among low risk participants across all post-intervention time points was marginally significant [ $F(2, 308.72) = 2.90, p = .056$ ], with pairwise comparisons showing those receiving the DBI to be slightly lower on negative affect than control participants ( $p = .050$ ;  $d = 0.31 [0.05, 0.57]$ ). There was no significant effect of condition among high risk participants [ $F(2, 313.56) = 1.01, p = .365$ ].

Table 6.5

*Effect Sizes (Cohen's d) for Between-Groups Pairwise Comparisons Controlling for Baseline Assessment*

Variable	Low Risk (n = 242)			High Risk (n = 103)		
	Post <i>d</i> [95% CI]	1-Month <i>d</i> [95% CI]	6-month <i>d</i> [95% CI]	Post <i>d</i> [95% CI]	1-Month <i>d</i> [95% CI]	6-month <i>d</i> [95% CI]
<i>Primary outcomes</i>						
Weight & Shape Concerns						
MBI vs. Con	0.05 [-0.20, 0.30]	0.15 [-0.09, 0.40]	0.10 [-0.15, 0.35]	0.00 [-0.24, 0.25]	-0.09 [-0.34, 0.16]	0.01 [-0.24, 0.26]
DBI vs. Con	0.16 [-0.10, 0.41]	0.14 [-0.12, 0.39]	0.09 [-0.16, 0.35]	0.07 [-0.19, 0.32]	0.15 [-0.11, 0.41]	0.03 [-0.22, 0.29]
DBI vs. MBI	0.11 [-0.13, 0.35]	-0.01 [-0.25, 0.23]	0.00 [-0.25, 0.24]	0.06 [-0.18, 0.31]	0.24 [0.00, 0.48]	0.02 [-0.22, 0.26]
Weight Concerns (Screen)						
MBI vs. Con	0.30 [0.05, 0.55]*	0.39 [0.14, 0.64]**	0.28 [0.03, 0.52]	0.01 [-0.23, 0.26]	-0.12 [-0.36, 0.13]	0.00 [-0.25, 0.25]
DBI vs. Con	0.32 [0.06, 0.58]*	0.41 [0.15, 0.67]**	0.38 [0.12, 0.63]**	0.20 [-0.06, 0.46]	0.10 [-0.16, 0.36]	0.02 [-0.24, 0.27]
DBI vs. MBI	0.02 [-0.22, 0.26]	0.04 [-0.20, 0.29]	0.11 [-0.14, 0.35]	0.19 [-0.06, 0.43]	0.22 [-0.03, 0.46]	0.02 [-0.23, 0.26]
Negative Affect						
MBI vs. Con	0.20 [-0.04, 0.45]	0.14 [-0.10, 0.39]	0.02 [-0.23, 0.27]	-0.04 [-0.29, 0.21]	-0.10 [-0.35, 0.15]	-0.06 [-0.30, 0.19]
DBI vs. Con	0.31 [0.05, 0.56]	0.16 [-0.09, 0.42]	0.27 [0.01, 0.52]	-0.20 [-0.46, 0.05]	-0.07 [-0.33, 0.19]	-0.15 [-0.41, 0.10]
DBI vs. MBI	0.10 [-0.14, 0.35]	0.02 [-0.22, 0.27]	0.25 [0.01, 0.50]	-0.16 [-0.40, 0.08]	0.03 [-0.21, 0.28]	-0.10 [-0.34, 0.15]
<i>Secondary outcomes</i>						
Dietary restraint						
MBI vs. Con	0.23 [-0.01, 0.48]	0.19 [-0.06, 0.44]	0.27 [0.02, 0.51]	-0.09 [-0.34, 0.15]	-0.08 [-0.32, 0.17]	0.04 [-0.21, 0.29]
DBI vs. Con	0.24 [-0.01, 0.50]	0.24 [-0.02, 0.50]	0.26 [0.00, 0.52]	0.02 [-0.24, 0.28]	0.07 [-0.18, 0.33]	-0.01 [-0.26, 0.25]
DBI vs. MBI	0.01 [-0.23, 0.25]	0.06 [-0.18, 0.31]	0.00 [-0.24, 0.24]	0.12 [-0.13, 0.36]	0.15 [-0.09, 0.39]	-0.05 [-0.29, 0.19]
Thin-ideal internalisation						
MBI vs. Con	0.09 [-0.16, 0.34]	0.05 [-0.20, 0.30]	0.04 [-0.20, 0.29]	-0.03 [-0.28, 0.21]	-0.12 [-0.36, 0.13]	0.09 [-0.16, 0.34]
DBI vs. Con	0.01 [-0.24, 0.27]	-0.03 [-0.29, 0.22]	-0.01 [-0.26, 0.25]	-0.06 [-0.31, 0.20]	-0.13 [-0.38, 0.13]	0.11 [-0.15, 0.36]
DBI vs. MBI	-0.08 [-0.32, 0.16]	-0.08 [-0.33, 0.16]	-0.05 [-0.29, 0.19]	-0.02 [-0.26, 0.22]	-0.01 [-0.25, 0.23]	0.02 [-0.23, 0.26]
Sociocultural pressures						
MBI vs. Con	0.16 [-0.09, 0.41]	0.03 [-0.21, 0.28]	0.22 [-0.03, 0.47]	0.00 [-0.25, 0.25]	-0.02 [-0.27, 0.22]	0.17 [-0.08, 0.42]
DBI vs. Con	0.13 [-0.12, 0.39]	0.01 [-0.24, 0.27]	0.25 [-0.01, 0.51]	0.02 [-0.24, 0.27]	0.01 [-0.25, 0.26]	0.16 [-0.09, 0.42]
DBI vs. MBI	-0.03 [-0.27, 0.21]	-0.02 [-0.26, 0.22]	0.03 [-0.22, 0.27]	0.02 [-0.22, 0.26]	0.03 [-0.21, 0.27]	-0.01 [-0.25, 0.23]

Note. \*\*  $p < .01$ , \*  $p < .05$ ; Cohen's  $d = M_2 - M_1 / SD_{pooled}$ ; MBI = Mindfulness-based intervention, DBI = Dissonance-based intervention, Con = Assessment-only control.

Sample sizes for low and high risk groups, respectively, by condition: Control,  $n = 71$  &  $30$ ; MBI,  $n = 97$  &  $39$ ; DBI,  $n = 74$  &  $34$

Table 6.5 (continued)

*Effect Sizes (Cohen's d) for Between-Groups Pairwise Comparisons Controlling for Baseline Assessment*

Variable	Low Risk (n = 243)			High Risk (n = 102)		
	Post <i>d</i> [95% CI]	1-Month <i>d</i> [95% CI]	6-month <i>d</i> [95% CI]	Post <i>d</i> [95% CI]	1-Month <i>d</i> [95% CI]	6-month <i>d</i> [95% CI]
Emotion Dysregulation						
MBI vs. Con	0.10 [-0.15, 0.35]	0.16 [-0.09, 0.41]	0.06 [-0.19, 0.31]	0.06 [-0.18, 0.31]	-0.12 [-0.36, 0.13]	-0.10 [-0.35, 0.15]
DBI vs. Con	0.24 [-0.02, 0.50]	0.23 [-0.03, 0.48]	0.11 [-0.15, 0.37]	-0.14 [-0.40, 0.11]	-0.11 [-0.36, 0.15]	-0.15 [-0.40, 0.11]
DBI vs. MBI	0.15 [-0.10, 0.39]	0.08 [-0.17, 0.32]	0.05 [-0.19, 0.29]	-0.21 [-0.46, 0.03]	0.01 [-0.23, 0.25]	-0.05 [-0.29, 0.19]
Escape-Avoidant Coping						
MBI vs. Con	0.26 [0.01, 0.51]	0.15 [-0.10, 0.40]	0.03 [-0.22, 0.28]	-0.03 [-0.27, 0.22]	-0.15 [-0.40, 0.10]	-0.18 [-0.42, 0.07]
DBI vs. Con	0.29 [0.03, 0.54]	0.11 [-0.15, 0.37]	0.01 [-0.25, 0.26]	-0.14 [-0.39, 0.12]	-0.21 [-0.47, 0.04]	-0.14 [-0.40, 0.11]
DBI vs. MBI	0.03 [-0.21, 0.27]	-0.04 [-0.28, 0.20]	-0.03 [-0.27, 0.22]	-0.11 [-0.35, 0.13]	-0.06 [-0.30, 0.18]	0.03 [-0.21, 0.27]
Self-Compassion <sup>a</sup>						
MBI vs. Con	0.09 [-0.15, 0.34]	0.21 [-0.04, 0.46]	0.13 [-0.12, 0.38]	-0.16 [-0.40, 0.09]	0.05 [-0.19, 0.30]	0.01 [-0.24, 0.26]
DBI vs. Con	0.12 [-0.13, 0.38]	0.18 [-0.07, 0.44]	0.27 [0.02, 0.53]	-0.11 [-0.37, 0.14]	-0.21 [-0.47, 0.04]	-0.02 [-0.28, 0.23]
DBI vs. MBI	0.03 [-0.21, 0.27]	-0.02 [-0.26, 0.22]	0.15 [-0.10, 0.39]	0.04 [-0.20, 0.29]	-0.26 [-0.51, -0.02]	-0.03 [-0.28, 0.21]
ED symptoms						
MBI vs. Con	0.14 [-0.11, 0.39]	0.09 [-0.16, 0.34]	0.10 [-0.15, 0.34]	-0.03 [-0.28, 0.21]	-0.08 [-0.32, 0.17]	0.03 [-0.22, 0.27]
DBI vs. Con	0.27 [0.02, 0.53]	0.12 [-0.13, 0.38]	0.15 [-0.10, 0.41]	0.07 [-0.19, 0.33]	0.08 [-0.18, 0.33]	-0.03 [-0.28, 0.23]
DBI vs. MBI	0.13 [-0.11, 0.38]	0.04 [-0.20, 0.28]	0.06 [-0.18, 0.30]	0.10 [-0.14, 0.35]	0.15 [-0.09, 0.39]	-0.05 [-0.29, 0.19]
Psychosocial Impairment						
MBI vs. Con	0.20 [-0.04, 0.45]	0.18 [-0.07, 0.42]	0.19 [-0.06, 0.43]	0.04 [-0.21, 0.29]	-0.17 [-0.41, 0.08]	0.06 [-0.19, 0.31]
DBI vs. Con	0.23 [-0.03, 0.49]	0.25 [-0.01, 0.51]	0.21 [-0.05, 0.47]	-0.02 [-0.28, 0.23]	0.01 [-0.25, 0.27]	-0.16 [-0.41, 0.10]
DBI vs. MBI	0.03 [-0.21, 0.27]	0.08 [-0.16, 0.33]	0.03 [-0.22, 0.27]	-0.06 [-0.31, 0.18]	0.18 [-0.07, 0.42]	-0.22 [-0.47, 0.02]

Note. \*\*  $p < .01$ , \*  $p < .05$ ; Cohen's  $d = M_2 - M_1 / SD_{\text{pooled}}$ ; MBI = Mindfulness-based intervention, DBI = Dissonance-based intervention, Con = Assessment-only control;

<sup>a</sup> Negative values reflect improvement with respect to comparison condition; Sample sizes for low and high risk groups, respectively, by condition: Control,  $n = 71$  & 30; MBI,  $n = 97$  & 39; DBI,  $n = 74$  & 34

6.3.2.2.1.2 *Secondary Outcomes.* A significant effect of condition among low risk participants was found for dietary restraint [ $F(2, 316.52) = 3.74, p = .025$ ], with pairwise comparisons revealing significant improvements collapsed across time for DBI participants relative to control participants ( $p = .043; d = 0.31, 95\% \text{ CI } [0.05, 0.57]$ ). Differences between conditions were not significant among high risk participants [ $F(2, 322.80) = 0.32, p = .729$ ].

A marginally significant effect of condition among low risk participants was also found for psychosocial impairment [ $F(2, 316.54) = 3.06, p = .048$ ]. Pairwise comparisons indicated DBI participants to have lower impairment than control, although this difference did not attain significance ( $p = .061, d = 0.30, 95\% \text{ CI } [0.04, 0.55]$ ).

**6.3.2.3 Supplementary intention-to-treat (ITT) analysis.** Mixed models conducted with the inclusion of the baseline assessment, and therefore retaining all participants, were consistent with the above findings with significant effects of condition for weight concerns and negative affect only. For conciseness, only effect sizes for pairwise comparisons at each follow-up point are provided for the purposes of comparison (**Table 6.6**).

**6.3.2.4 Clinical significance.** As an initial indicator of clinically important change, within-group effect sizes of the change from baseline to each post-intervention and follow-up point are presented in Table 6.7. No large effect sizes were evident for within-group changes in outcome measures among low risk participants. For high risk participants, large effect sizes were observed for improvements in the screening measure of weight concerns for the DBI group (all post-intervention time points), MBI group (6-month), and control group (1-month and 6-month). DBI participants additionally demonstrated improvements associated

with a large effect size on the measure of weight and shape concerns from baseline to 1-month follow-up. Among secondary outcomes, large effect sizes were observed for improvements in dietary restraint in both the MBI and control groups from baseline to 6-month follow-up.

Reliable change indices for each outcome variable by condition and risk status are displayed in **Table 6.8**. As can be seen, relatively small proportions of participants experienced improvements in outcomes as indicated by reliable change from baseline to final follow-up. However, these figures should be interpreted with caution as they represent only participants who completed both baseline and 6-month assessment ( $n = 282$ ; 75%). Fisher's exact test of likelihood ratios indicated that neither intervention resulted in a significantly greater number of improved people relative to the control group for any outcome for low risk participants or high risk participants separately (all  $p > .06$ ). However, when risk categories were combined the MBI condition showed a greater number of participants improved relative to control on psychosocial impairment,  $LR\chi^2(1) = 7.02$ ,  $p = .036$ ,  $OR = 10.648$ , 95% CI [0.59 - 191.86], and relative to DBI on eating disorder symptoms,  $LR\chi^2(1) = 5.815$ ,  $p = .037$ ,  $OR = 7.81$ , 95% CI [0.96 - 62.50].

Table 6.6

*Effect Sizes (Cohen's d) for Between-Groups Pairwise Comparisons Controlling for Baseline Assessment, Intention-to-Treat Analysis*

Variable	Low Risk (n = 242)			High Risk (n = 103)		
	Post <i>d</i> [95% CI]	1-Month <i>d</i> [95% CI]	6-month <i>d</i> [95% CI]	Post <i>d</i> [95% CI]	1-Month <i>d</i> [95% CI]	6-month <i>d</i> [95% CI]
<i>Primary outcomes</i>						
Weight & Shape Concerns						
MBI vs. Con	0.12 [-0.19, 0.42]	0.28 [-0.03, 0.59]	0.16 [-0.15, 0.47]	0.15 [-0.16, 0.45]	-0.14 [-0.45, 0.17]	0.02 [-0.29, 0.32]
DBI vs. Con	0.15 [-0.18, 0.47]	0.17 [-0.15, 0.50]	0.08 [-0.24, 0.41]	0.18 [-0.15, 0.50]	0.34 [0.01, 0.67]	0.08 [-0.24, 0.41]
DBI vs. MBI	0.03 [-0.27, 0.33]	-0.11 [-0.85, 0.64]	-0.08 [-0.38, 0.22]	0.03 [-0.27, 0.33]	0.48 [-0.27, 1.22]	0.07 [-0.23, 0.37]
Weight Concerns (Screen)						
MBI vs. Con	0.50 [0.19, 0.81]**	0.60 [0.28, 0.91]***	0.45 [0.14, 0.76]**	0.03 [-0.28, 0.34]	-0.31 [-0.62, 0.00]	-0.09 [-0.40, 0.22]
DBI vs. Con	0.52 [0.18, 0.84]**	0.64 [0.30, 0.97]***	0.58 [0.24, 0.91]**	0.51 [0.18, 0.84]	0.27 [-0.06, 0.60]	0.05 [-0.27, 0.38]
DBI vs. MBI	0.01 [-0.29, 0.31]	0.05 [-0.69, 0.8]	0.12 [-0.19, 0.42]	0.48 [0.17, 0.79]	0.57 [-0.18, 1.32]*	0.15 [-0.16, 0.45]
Negative Affect						
MBI vs. Con	0.32 [0.01, 0.63]	0.21 [-0.10, 0.51]	0.00 [-0.31, 0.31]	-0.20 [-0.51, 0.10]	-0.08 [-0.39, 0.23]	-0.06 [-0.37, 0.24]
DBI vs. Con	0.40 [0.07, 0.73]	0.21 [-0.12, 0.54]	0.35 [0.02, 0.68]	-0.55 [-0.87, -0.21]	-0.26 [-0.59, 0.06]	-0.35 [-0.67, -0.02]
DBI vs. MBI	0.07 [-0.24, 0.37]	0.01 [-0.74, 0.75]	0.35 [0.04, 0.65]	-0.35 [-0.65, -0.04]	-0.18 [-0.92, 0.57]	-0.30 [-0.60, 0.01]
<i>Secondary outcomes</i>						
Dietary restraint						
MBI vs. Con	0.35 [0.04, 0.66]	0.32 [0.01, 0.62]	0.41 [0.10, 0.72]	-0.07 [-0.37, 0.24]	-0.08 [-0.39, 0.22]	-0.01 [-0.32, 0.29]
DBI vs. Con	0.34 [0.01, 0.67]	0.37 [0.040, 0.70]	0.37 [0.04, 0.69]	0.00 [-0.33, 0.32]	-0.03 [-0.35, 0.30]	-0.16 [-0.48, 0.17]
DBI vs. MBI	-0.01 [-0.32, 0.29]	0.07 [-0.68, 0.81]	-0.05 [-0.35, 0.25]	0.06 [-0.24, 0.36]	0.05 [-0.69, 0.80]	-0.15 [-0.46, 0.15]
Thin-ideal internalisation						
MBI vs. Con	0.15 [-0.16, 0.46]	0.08 [-0.23, 0.39]	0.05 [-0.25, 0.36]	-0.07 [-0.38, 0.23]	-0.23 [-0.53, 0.08]	0.20 [-0.10, 0.51]
DBI vs. Con	0.09 [-0.24, 0.41]	-0.03 [-0.36, 0.29]	0.02 [-0.30, 0.35]	-0.19 [-0.52, 0.13]	-0.42 [-0.74, -0.09]	0.16 [-0.17, 0.49]
DBI vs. MBI	-0.07 [-0.37, 0.24]	-0.12 [-0.86, 0.63]	-0.03 [-0.34, 0.27]	-0.12 [-0.42, 0.18]	-0.19 [-0.94, 0.55]	-0.04 [-0.34, 0.26]
Sociocultural pressures						
MBI vs. Con	0.19 [-0.11, 0.5]	0.05 [-0.26, 0.36]	0.27 [-0.04, 0.57]	-0.06 [-0.37, 0.24]	-0.02 [-0.32, 0.29]	0.27 [-0.04, 0.57]
DBI vs. Con	0.23 [-0.10, 0.56]	0.03 [-0.29, 0.36]	0.34 [0.01, 0.66]	0.08 [-0.25, 0.40]	-0.07 [-0.39, 0.26]	0.30 [-0.03, 0.62]
DBI vs. MBI	0.03 [-0.27, 0.33]	-0.02 [-0.76, 0.73]	0.05 [-0.25, 0.36]	0.14 [-0.16, 0.45]	-0.05 [-0.79, 0.70]	0.04 [-0.27, 0.34]

Note. \*\*\*  $p < .001$ , \*\*  $p < .01$ , \*  $p < .05$ ; Cohen's  $d = M_2 - M_1 / SD_{pooled}$ ; MBI = Mindfulness-based intervention, DBI = Dissonance-based intervention, Con = Assessment-only control. Sample sizes for low and high risk groups, respectively, by condition: Control,  $n = 71$  & 30; MBI,  $n = 97$  & 39; DBI,  $n = 74$  & 34

Table 6.6 (continued)

*Effect Sizes (Cohen's d) for Between-Groups Pairwise Comparisons Controlling for Baseline Assessment, Intention-to-Treat Analysis*

Variable	Low Risk ( <i>n</i> = 243)			High Risk ( <i>n</i> = 102)		
	Post <i>d</i> [95% CI]	1-Month <i>d</i> [95% CI]	6-month <i>d</i> [95% CI]	Post <i>d</i> [95% CI]	1-Month <i>d</i> [95% CI]	6-month <i>d</i> [95% CI]
Emotion Dysregulation						
MBI vs. Con	0.15 [-0.16, 0.46]	0.24 [-0.07, 0.54]	0.15 [-0.16, 0.45]	0.18 [-0.13, 0.48]	-0.19 [-0.49, 0.12]	-0.20 [-0.50, 0.11]
DBI vs. Con	0.28 [-0.04, 0.61]	0.28 [-0.05, 0.60]	0.14 [-0.19, 0.46]	-0.31 [-0.63, 0.02]	-0.28 [-0.61, 0.04]	-0.27 [-0.60, 0.05]
DBI vs. MBI	0.14 [-0.17, 0.44]	0.04 [-0.70, 0.79]	-0.01 [-0.32, 0.29]	-0.50 [-0.80, -0.19]	-0.10 [-0.84, 0.65]	-0.08 [-0.39, 0.22]
Escape-Avoidant Coping						
MBI vs. Con	0.40 [0.09, 0.71]*	0.24 [-0.07, 0.54]	0.03 [-0.27, 0.34]	-0.16 [-0.46, 0.15]	-0.29 [-0.59, 0.02]	-0.28 [-0.59, 0.02]
DBI vs. Con	0.45 [0.12, 0.78]*	0.19 [-0.14, 0.51]	-0.03 [-0.36, 0.30]	-0.33 [-0.66, 0.00]	-0.52 [-0.85, -0.18]	-0.28 [-0.6, 0.05]
DBI vs. MBI	0.04 [-0.26, 0.35]	-0.05 [-0.79, 0.70]	-0.06 [-0.36, 0.24]	-0.17 [-0.47, 0.13]	-0.23 [-0.97, 0.52]	0.00 [-0.30, 0.30]
Self-Compassion <sup>a</sup>						
MBI vs. Con	0.12 [-0.18, 0.43]	0.30 [-0.01, 0.60]	0.14 [-0.17, 0.45]	-0.40 [-0.70, -0.09]	-0.04 [-0.34, 0.27]	-0.06 [-0.37, 0.24]
DBI vs. Con	0.18 [-0.15, 0.50]	0.30 [-0.03, 0.62]	0.37 [0.04, 0.70]	-0.14 [-0.47, 0.18]	-0.39 [-0.71, -0.06]	-0.02 [-0.35, 0.30]
DBI vs. MBI	0.05 [-0.25, 0.35]	0.01 [-0.74, 0.75]	0.22 [-0.09, 0.52]	0.26 [-0.05, 0.56]	-0.35 [-1.09, 0.40]	0.04 [-0.26, 0.34]
ED symptoms						
MBI vs. Con	0.27 [-0.04, 0.57]	0.19 [-0.12, 0.49]	0.16 [-0.15, 0.47]	0.04 [-0.26, 0.35]	-0.11 [-0.42, 0.19]	0.02 [-0.29, 0.33]
DBI vs. Con	0.34 [0.01, 0.67]	0.19 [-0.14, 0.52]	0.19 [-0.13, 0.52]	0.17 [-0.16, 0.50]	0.16 [-0.17, 0.49]	-0.03 [-0.36, 0.29]
DBI vs. MBI	0.09 [-0.22, 0.39]	0.01 [-0.73, 0.76]	0.03 [-0.27, 0.33]	0.12 [-0.19, 0.42]	0.27 [-0.48, 1.01]	-0.04 [-0.35, 0.26]
Psychosocial Impairment						
MBI vs. Con	0.36 [0.05, 0.67]	0.31 [0.00, 0.61]	0.32 [0.01, 0.62]	0.24 [-0.07, 0.55]	-0.18 [-0.48, 0.13]	0.09 [-0.22, 0.40]
DBI vs. Con	0.34 [0.01, 0.66]	0.37 [0.04, 0.70]	0.30 [-0.03, 0.63]	-0.03 [-0.36, 0.29]	-0.02 [-0.34, 0.31]	-0.35 [-0.68, -0.02]
DBI vs. MBI	-0.03 [-0.33, 0.28]	0.08 [-0.67, 0.82]	-0.02 [-0.33, 0.28]	-0.27 [-0.58, 0.03]	0.16 [-0.59, 0.90]	-0.46 [-0.77, -0.15]

Note. \*\*  $p < .01$ , \*  $p < .05$ ; Cohen's  $d = M_2 - M_1 / SD_{\text{pooled}}$ ; MBI = Mindfulness-based intervention, DBI = Dissonance-based intervention, Con = Assessment-only control;

<sup>a</sup> Negative values reflect improvement with respect to comparison condition; Sample sizes for low and high risk groups, respectively, by condition: Control,  $n = 71$  & 30; MBI,  $n = 97$  & 39; DBI,  $n = 74$  & 34

Table 6.7  
*Effect Sizes (Cohen's d) for Within-Group Changes From Baseline to Each Follow-Up Assessment*

Variable	Low Risk			High Risk		
	Post (n=210)	1-month (n=219)	6-month (n=193)	Post (n=88)	1-month (n=89)	6-month (n=89)
	<i>d</i>	<i>d</i>	<i>d</i>	<i>d</i>	<i>d</i>	<i>d</i>
<i>Primary outcomes</i>						
Weight & Shape Concerns						
Control	0.08	0.16	0.08	0.26	0.41	0.40
MBI	0.17	0.44	0.31	0.20	0.37	0.47
DBI	0.12	0.35	0.16	0.29	0.83	0.48
Weight Concerns (screen)						
Control	-0.28	-0.36	-0.49	0.48	1.04	1.03
MBI	0.17	0.29	0.06	0.46	0.72	0.89
DBI	0.10	0.38	0.09	1.02	1.37	1.03
Negative Affect						
Control	-0.28	0.04	-0.13	0.17	0.16	0.00
MBI	-0.01	0.19	-0.13	0.16	0.03	0.02
DBI	0.04	0.15	0.12	-0.38	-0.15	-0.33
<i>Secondary outcomes</i>						
Dietary restraint						
Control	-0.07	0.01	-0.19	0.59	0.62	0.76
MBI	0.32	0.40	0.41	0.46	0.62	0.79
DBI	0.22	0.42	0.32	0.42	0.62	0.55
Thin-ideal internalisation						
Control	0.08	0.09	-0.05	0.48	0.72	0.49
MBI	0.24	0.20	0.09	0.29	0.42	0.46
DBI	0.06	0.15	0.07	0.24	0.36	0.44

Table 6.7 (continued)

*Effect Sizes (Cohen's d) for Within-Group Changes From Baseline to Each Follow-Up Assessment*

Variable	Low Risk			High Risk		
	Post (n=210)	1-month (n=219)	6-month (n=193)	Post (n=88)	1-month (n=89)	6-month (n=89)
	<i>d</i>	<i>d</i>	<i>d</i>	<i>d</i>	<i>d</i>	<i>d</i>
Sociocultural pressures						
Control	0.05	0.12	-0.14	0.52	0.68	0.50
MBI	0.24	0.22	0.15	0.35	0.49	0.65
DBI	0.12	0.19	0.14	0.30	0.55	0.47
Self-Compassion						
Control	0.27	0.44	0.36	0.07	0.18	0.33
MBI	0.25	0.24	0.22	0.49	0.29	0.42
DBI	0.11	0.25	0.08	0.21	0.58	0.31
Emotion Dysregulation						
Control	-0.03	0.11	0.03	0.20	0.26	0.11
MBI	0.11	0.26	0.16	0.31	0.15	-0.06
DBI	0.18	0.32	0.16	-0.21	-0.04	-0.20
Escape-Avoidant Coping						
Control	0.01	0.25	0.46	0.31	0.68	0.30
MBI	0.35	0.48	0.38	0.14	0.29	0.04
DBI	0.35	0.41	0.41	-0.11	0.11	0.13
ED symptoms						
Control	-0.13	-0.18	-0.18	0.02	0.10	0.13
MBI	0.05	0.08	0.08	0.15	0.14	0.17
DBI	0.01	0.03	-0.01	0.13	0.10	0.01
Psychosocial Impairment						
Control	-0.43	-0.33	-0.51	0.01	0.19	0.13
MBI	-0.02	0.11	0.02	0.26	0.11	0.30
DBI	-0.01	0.14	0.02	-0.20	0.09	-0.14

Table 6.8

*Number and Percentage of Participants who Experienced a Clinically Significant Change from Baseline to 6-month Follow-up, Based on Reliable Change Indices*

Variable	Low Risk						High Risk					
	Control (n = 58)		MBI (n = 71)		DBI (n = 64)		Control (n = 23)		MBI (n = 34)		DBI (n = 32)	
	↑n (%)	↓n (%)	↑n (%)	↓n (%)	↑n (%)	↓n (%)	↑n (%)	↓n (%)	↑n (%)	↓n (%)	↑n (%)	↓n (%)
<i>Primary outcomes</i>												
Weight & Shape Concerns	2 (3)	3 (5)	3 (4)	1 (1)	2 (3)	2 (3)	1 (4)	0 (0)	5 (15)	0 (0)	4 (13)	0 (0)
Weight Concerns (screen)	0 (0)	10 (17)	5 (7)	7 (10)	4 (6)	5 (8)	3 (13)	0 (0)	6 (18)	1 (3)	7 (22)	0 (0)
Negative Affect	0 (0)	0 (0)	2 (3)	2 (3)	1 (2)	0 (0)	1 (4)	0 (0)	3 (9)	0 (0)	0 (0)	0 (0)
<i>Secondary outcomes</i>												
Dietary restraint	2 (3)	7 (12)	2 (3)	1 (1)	2 (3)	1 (2)	0 (0)	0 (0)	6 (18)	0 (0)	3 (9)	0 (0)
Thin-ideal internalisation	2 (3)	4 (7)	3 (4)	3 (4)	2 (3)	2 (3)	0 (0)	0 (0)	2 (6)	0 (0)	3 (9)	0 (0)
Sociocultural pressures	1 (2)	5 (9)	4 (6)	2 (3)	4 (6)	0 (0)	2 (9)	0 (0)	4 (12)	1 (3)	6 (19)	1 (3)
Self-Compassion Emotion Dysregulation	5 (9)	1 (2)	1 (1)	3 (4)	0 (0)	1 (2)	2 (9)	1 (4)	3 (9)	1 (3)	2 (6)	0 (0)
Escape-Avoidant Coping	3 (5)	1 (2)	1 (1)	1 (1)	0 (0)	2 (3)	1 (4)	2 (9)	1 (3)	1 (3)	0 (0)	0 (0)
ED symptoms	5 (9)	2 (3)	10 (14)	3 (4)	7 (11)	2 (3)	2 (9)	0 (0)	5 (15)	3 (9)	1 (3)	0 (0)
Psychosocial Impairment	1 (2)	3 (5)	2 (3)	1 (1)	0 (0)	1 (2)	1 (4)	0 (0)	6 (18)	2 (6)	1 (3)	0 (0)
	0 (0)	7 (12)	1 (1)	4 (6)	1 (2)	1 (2)	0 (0)	2 (9)	5 (15)	2 (6)	1 (3)	0 (0)

Note: ↑ = significant improvement, ↓ = significant deterioration;

### 6.3.3 Impact of Facilitator

To estimate effects under optimal facilitation (e.g., appropriate knowledge and experience), additional analysis is presented using only the classes facilitated by the author ( $n = 156$ ). This involved 59 MBI and 40 DBI participants, as well as a randomly selected 50% of control participants ( $n = 57$ ) across all three year levels (10, 11, and 12) from all four participating schools. All analyses were carried out as for the whole sample, with the exception that risk status was not included in the models. This was due to insufficient cell sizes and therefore limited statistical power to detect significant differences with respect to risk.

**6.3.3.1 Baseline data.** This subset exhibited similar characteristics to the whole sample with regard to age ( $M = 15.74$ ,  $SD = 0.82$ , range = 14 – 18), BMI ( $M = 20.62$ ,  $SD = 3.04$ , range = 14.95 – 31.22) and baseline level of weight and shape concern ( $M = 2.66$ ,  $SD = 1.74$ ). The proportion of participants classified as being high risk ( $WCS \geq 57$ ) was also similar to the whole sample, with 26.9% ( $n = 39$ ) of participants endorsing high weight concerns at baseline. There were no significant differences between conditions at baseline on BMI or any of the outcome measures, with all  $p > .2$ .

**6.3.3.2 Intervention validity.** Results of a linear mixed model analysis with respect to mindfulness showed no significant overall interaction between time and condition [ $F(4, 191.33) = 1.11$ ,  $p = .351$ ]. There was a significant main effect of condition [ $F(2, 138.56) = 4.11$ ,  $p = .018$ ], with Bonferroni-adjusted pairwise comparisons showing MBI participants to have significantly higher mindfulness across all post-intervention time-points relative to control participants ( $p = .023$ ,  $d = 0.50$ , 95% CI [0.13, 0.87]). The difference between DBI participants and control was not significant ( $p = .109$ ,  $d = 0.43$ , 95% CI [0.02, 0.84]). This indicates that the

mindfulness-based intervention exhibited a small advantage in improving mindful awareness and acceptance with respect to the comparison conditions in this subset.

**6.3.3.3 Intervention effects on outcomes.** Adjusted means across condition and time are displayed in **Table 6.9**. Results of the linear mixed models for each outcome variable are presented in **Table 6.10**. Key findings are described below.

**6.3.3.3.1 Main effects.** As can be seen, significant main effects of condition were revealed for the screening measure of weight concerns, the longer measure of both weight and shape concerns, dietary restraint, sociocultural pressures, and psychosocial impairment. Collapsed across all post-intervention time points, pairwise comparisons showed that both MBI ( $p = .011$ ,  $d = 0.54$ , 95% CI [0.17, 0.91]) and DBI ( $p = .022$ ,  $d = 0.55$ , 95% CI [0.14, 0.96]) participants demonstrated lower weight concerns (screen) than control; DBI participants showed reduced sociocultural pressures relative to control ( $p = .018$ ,  $d = 0.57$ , 95% CI [0.16, 0.98]); and MBi participants showed greater reductions than control for weight and shape concerns ( $p = .046$ ,  $d = 0.45$ , 95% CI [0.08, 0.82]), dietary restraint ( $p = .044$ ,  $d = 0.46$ , 95% CI [0.09, 0.83]), and psychosocial impairment ( $p = .007$ ,  $d = 0.57$ , 95% CI [0.20, 0.94]).

Main effects of time were found for both primary outcome variables of weight and shape concerns and negative affect. Pairwise comparisons showed that, for weight and shape concerns, participants across conditions reported significantly lower scores than post-intervention at both 1-month ( $p = .009$ ,  $d = 0.38$ , 95% CI [0.01, 0.74]) and 6-month ( $p = .030$ ,  $d = 0.41$ , 95% CI [0.00, 0.81]) follow-up assessments, indicating improvement throughout follow-up. For negative affect, participants were significantly lower than post-intervention at the 1-month

assessment only ( $p = .010$ ,  $d = 0.39$ , 95% CI [0.02, 0.75]), indicating continued improvement to 1-month, but fading by 6-month follow-up.

**6.3.3.3.2 Interaction effects.** Interactions between time and condition, reflecting the differential impact of conditions across assessment time points, were significant for weight and shape concerns, self-compassion, and eating disorder symptoms, and marginally significant for dietary restraint. There were no significant interactions for remaining outcomes. Graphical representations of outcomes demonstrating significant time by condition interactions or main effects of condition can be found in Appendix C.

Table 6.9  
*Adjusted Means (and Standard Errors) of Outcomes by Condition and Time for Facilitator Subset*

Variable	Baseline Covariate	Post-Intervention	1-month Follow-up	6-month Follow-up
	<i>M</i>	<i>M (SE)</i>	<i>M (SE)</i>	<i>M (SE)</i>
<i>Primary outcomes</i>				
Weight & Shape Concerns	2.61			
Control		2.76 (0.17)	2.53 (0.16)	2.63 (0.17)
MBI		2.58 (0.16)	2.16 (0.15)	1.82 (0.16)
DBI		2.26 (0.18)	2.06 (0.19)	2.29 (0.19)
Weight Concerns (Screen)	39.91			
Control		44.47 (2.34)	42.00 (2.22)	44.13 (2.32)
MBI		37.92 (2.11)	35.89 (2.06)	33.87 (2.19)
DBI		35.53 (2.57)	33.16 (2.54)	38.45 (2.57)
Negative Affect <sup>±</sup>	0.30			
Control		0.35 (0.02)	0.31 (0.02)	0.32 (0.02)
MBI		0.29 (0.02)	0.26 (0.02)	0.31 (0.02)
DBI		0.31 (0.03)	0.25 (0.02)	0.26 (0.03)
<i>Secondary outcomes</i>				
Dietary Restraint <sup>±</sup>	1.51			
Control		1.51 (0.04)	1.45 (0.04)	1.50 (0.04)
MBI		1.45 (0.04)	1.38 (0.04)	1.30 (0.04)
DBI		1.43 (0.05)	1.42 (0.05)	1.42 (0.05)
Thin-ideal Internalisation	3.23			
Control		3.13 (0.11)	3.09 (0.10)	3.34 (0.10)
MBI		3.17 (0.10)	3.14 (0.09)	3.15 (0.10)
DBI		2.89 (0.12)	2.93 (0.12)	3.09 (0.12)
Sociocultural Pressures	3.02			
Control		3.01 (0.12)	2.97 (0.12)	3.25 (0.12)
MBI		2.94 (0.11)	2.86 (0.11)	2.82 (0.12)
DBI		2.62 (0.14)	2.69 (0.14)	2.72 (0.14)
Self-Compassion	2.75			
Control		2.91 (0.08)	2.99 (0.08)	3.00 (0.08)
MBI		2.82 (0.07)	2.90 (0.07)	3.08 (0.08)
DBI		2.94 (0.09)	3.06 (0.09)	2.87 (0.09)
Emotion Dysregulation <sup>±</sup>	1.59			
Control		1.59 (0.02)	1.60 (0.02)	1.58 (0.02)
MBI		1.59 (0.02)	1.53 (0.02)	1.57 (0.02)
DBI		1.56 (0.03)	1.52 (0.03)	1.56 (0.03)
Escape-Avoidant Coping	2.29			
Control		2.33 (0.10)	2.13 (0.09)	2.00 (0.09)
MBI		2.18 (0.09)	2.13 (0.08)	2.15 (0.09)
DBI		2.14 (0.10)	2.04 (0.10)	2.20 (0.10)
ED Symptoms <sup>±</sup>	0.21			
Control		0.23 (0.02)	0.21 (0.02)	0.22 (0.02)
MBI		0.21 (0.02)	0.18 (0.01)	0.15 (0.02)
DBI		0.18 (0.02)	0.18 (0.02)	0.19 (0.02)
Psychosocial Impairment <sup>±</sup>	0.28			
Control		0.33 (0.03)	0.31 (0.03)	0.34 (0.03)
MBI		0.26 (0.03)	0.23 (0.02)	0.22 (0.03)
DBI		0.27 (0.03)	0.26 (0.03)	0.29 (0.03)

<sup>±</sup> Transformed variables

Table 6.10  
*Main and Interaction Effects of Condition and Time for Facilitator Subset*

<b>Variable</b>	<b>F</b>	<b>df</b>	<b>p</b>
<i>Primary outcomes</i>			
Weight & Shape Concerns			
Time	5.11	2, 159.24	.007
Cond	3.63	2, 134.87	.029
Time x Condition	2.85	4, 161.40	.026
Weight Concerns (Screen)			
Time	2.01	2, 172.05	.137
Cond	5.47	2, 140.60	.005
Time x Condition	1.63	4, 189.17	.169
Negative Affect			
Time	4.41	2, 174.12	.014
Cond	2.25	2, 129.48	.110
Time x Condition	1.36	4, 174.87	.251
<i>Secondary outcomes</i>			
Dietary restraint			
Time	2.64	2, 166.14	.075
Cond	3.07	2, 134.29	.050
Time x Condition	2.37	4, 189.94	.054
Thin-ideal Internalisation			
Time	2.80	2, 168.56	.063
Cond	1.68	2, 135.07	.189
Time x Condition	0.92	4, 173.20	.455
Sociocultural pressures			
Time	0.77	2, 172.27	.466
Cond	3.95	2, 129.37	.022
Time x Condition	1.25	4, 182.08	.291
Emotion Dysregulation			
Time	2.77	2, 179.59	.065
Cond	0.92	2, 133.13	.402
Time x Condition	1.56	4, 179.78	.188
Escape-Avoidant Coping			
Time	2.34	2, 168.77	.100
Cond	0.04	2, 136.35	.956
Time x Condition	1.74	4, 169.66	.143
Self-Compassion			
Time	2.79	2, 198.36	.064
Cond	0.08	2, 133.72	.920
Time x Condition	3.08	4, 198.17	.017
ED symptoms			
Time	2.67	2, 148.40	.073
Cond	2.85	2, 134.15	.062
Time x Condition	2.47	4, 152.60	.047
Psychosocial Impairment			
Time	0.81	2, 178.38	.445
Cond	4.82	2, 130.44	.010
Time x Condition	0.72	4, 180.29	.577

**6.3.3.3 Post-hoc tests.** As for the whole sample, post-hoc tests assessed the simple effects of condition at each assessment time point, with Bonferroni-adjusted pairwise comparisons identifying specific differences between conditions. A significant effect of condition was evident at the final 6-month follow-up for weight and shape concerns [ $F(2,263.11) = 6.20, p = .002$ ], dietary restraint [ $F(2,264.90) = 6.58, p = .002$ ], sociocultural pressures [ $F(2,279.16) = 5.00, p = .007$ ], eating disorder symptoms [ $F(2,248.43) = 5.41, p = .005$ ], and psychosocial impairment [ $F(2,258.86) = 4.17, p = .006$ ]. In all cases except sociocultural pressures, pairwise comparisons revealed significant improvements for MBI participants with respect to control at 6-month follow-up. For sociocultural pressures, participants in both interventions were significantly improved relative to the control group at 6-months. **Table 6.11** displays effect sizes and associated confidence intervals for all pairwise comparisons, and provides a comparison with effect sizes from the whole sample. Despite the significant interaction for self-compassion, post-hoc testing revealed no significant differences between conditions at any of the post-intervention assessment points (post-intervention:  $F(2,261.65) = 0.70, p = .497$ ; 1-month:  $F(2,252.86) = 1.08, p = .342$ ; 6-month:  $F(2,269.64) = 1.53, p = .218$ ).

Table 6.11

*Effect Sizes (Cohen's d) for Between-Groups Pairwise Comparisons from the Current Facilitator Subset and the Whole Sample*

Variable	Facilitator Subset ( <i>n</i> = 156)			Whole Sample ( <i>n</i> = 345)		
	Post <i>d</i> [95% CI]	1-Month <i>d</i> [95% CI]	6-month <i>d</i> [95% CI]	Post <i>d</i> [95% CI]	1-Month <i>d</i> [95% CI]	6-month <i>d</i> [95% CI]
<i>Primary outcomes</i>						
Weight & Shape Concerns						
MBI vs. Con	0.14 [-0.22, 0.51]	0.31 [-0.06, 0.67]	0.65 [0.27, 1.02]**	0.04 [-0.32, 0.41]	0.00 [-0.36, 0.37]	0.10 [-0.27, 0.46]
DBI vs. Con	0.41 [0.00, 0.81]	0.39 [-0.02, 0.80]	0.27 [-0.14, 0.68]	0.22 [-0.19, 0.62]	0.31 [-0.09, 0.72]	0.12 [-0.28, 0.53]
DBI vs. MBI	0.27 [-0.13, 0.67]	0.09 [-0.32, 0.49]	-0.39 [-0.80, 0.01]	0.18 [-0.22, 0.59]	0.33 [-0.08, 0.73]	0.03 [-0.37, 0.43]
Weight Concerns (Screen)						
MBI vs. Con	0.39 [0.02, 0.75]	0.37 [0.01, 0.74]	0.60 [0.22, 0.97]**	0.27 [-0.1, 0.63]	0.15 [-0.21, 0.52]	0.23 [-0.14, 0.59]
DBI vs. Con	0.52 [0.11, 0.93]*	0.54 [0.12, 0.95]*	0.33 [-0.07, 0.74]	0.55 [0.14, 0.96]*	0.50 [0.09, 0.91]*	0.34 [-0.06, 0.75]
DBI vs. MBI	0.15 [-0.26, 0.55]	0.17 [-0.23, 0.57]	-0.28 [-0.68, 0.13]	0.30 [-0.11, 0.7]	0.36 [-0.04, 0.77]	0.12 [-0.28, 0.52]
Negative Affect						
MBI vs. Con	0.39 [0.02, 0.75]	0.33 [-0.04, 0.69]	0.05 [-0.31, 0.42]	0.11 [-0.25, 0.48]	-0.01 [-0.38, 0.35]	-0.05 [-0.42, 0.31]
DBI vs. Con	0.24 [-0.17, 0.64]	0.39 [-0.02, 0.80]	0.33 [-0.07, 0.74]	-0.01 [-0.41, 0.40]	0.05 [-0.36, 0.45]	0.03 [-0.38, 0.43]
DBI vs. MBI	-0.15 [-0.55, 0.25]	0.07 [-0.33, 0.48]	0.28 [-0.12, 0.68]	-0.13 [-0.53, 0.27]	0.07 [-0.34, 0.47]	0.09 [-0.31, 0.49]
<i>Secondary outcomes</i>						
Dietary restraint						
MBI vs. Con	0.19 [-0.18, 0.55]	0.26 [-0.11, 0.62]	0.67 [0.29, 1.04]**	0.07 [-0.30, 0.43]	0.05 [-0.32, 0.41]	0.26 [-0.11, 0.62]
DBI vs. Con	0.26 [-0.15, 0.66]	0.11 [-0.30, 0.51]	0.25 [-0.16, 0.65]	0.23 [-0.18, 0.63]	0.30 [-0.11, 0.71]	0.21 [-0.20, 0.61]
DBI vs. MBI	0.07 [-0.33, 0.47]	-0.14 [-0.55, 0.26]	-0.43 [-0.83, -0.02]	0.17 [-0.23, 0.57]	0.27 [-0.14, 0.67]	-0.07 [-0.47, 0.34]
Thin-ideal internalisation						
MBI vs. Con	-0.06 [-0.42, 0.31]	-0.06 [-0.42, 0.31]	0.25 [-0.12, 0.61]	0.03 [-0.34, 0.39]	-0.11 [-0.47, 0.25]	0.15 [-0.22, 0.51]
DBI vs. Con	0.31 [-0.10, 0.71]	0.22 [-0.19, 0.62]	0.32 [-0.08, 0.73]	-0.06 [-0.46, 0.35]	-0.19 [-0.60, 0.21]	0.13 [-0.27, 0.53]
DBI vs. MBI	0.38 [-0.02, 0.79]	0.29 [-0.12, 0.69]	0.08 [-0.33, 0.48]	-0.10 [-0.50, 0.31]	-0.09 [-0.49, 0.32]	-0.02 [-0.42, 0.38]
Sociocultural pressures						
MBI vs. Con	0.09 [-0.28, 0.45]	0.13 [-0.24, 0.49]	0.47 [0.09, 0.83]*	0.12 [-0.24, 0.49]	0.00 [-0.37, 0.36]	0.39 [0.02, 0.76]
DBI vs. Con	0.44 [0.030, 0.84]	0.33 [-0.08, 0.73]	0.59 [0.17, 1.00]*	0.13 [-0.27, 0.54]	0.02 [-0.39, 0.42]	0.41 [0.00, 0.82]
DBI vs. MBI	0.36 [-0.04, 0.77]	0.21 [-0.19, 0.61]	0.11 [-0.29, 0.51]	0.00 [-0.40, 0.40]	0.02 [-0.38, 0.43]	0.01 [-0.39, 0.41]

Note. \*\*  $p < .01$ , \*  $p < .05$ ; Bonferroni adjustments applied; MBI = Mindfulness-based intervention, DBI = Dissonance-based intervention, Con = Assessment-only control;

Table 6.11 (continued)

*Effect Sizes (Cohen's d) for Between-Groups Pairwise Comparisons from the Current Facilitator Subset and the Whole Sample*

Variable	Facilitator Subset ( <i>n</i> = 156)			Whole Sample ( <i>n</i> = 345)		
	Post	1-Month	6-month	Post	1-Month	6-month
	<i>d</i> [95% CI]	<i>d</i> [95% CI]	<i>d</i> [95% CI]	<i>d</i> [95% CI]	<i>d</i> [95% CI]	<i>d</i> [95% CI]
Emotion Dysregulation						
MBI vs. Con	0.03 [-0.34, 0.39]	0.40 [0.03, 0.76]	0.06 [-0.30, 0.43]	0.16 [-0.21, 0.52]	-0.02 [-0.38, 0.35]	-0.07 [-0.44, 0.29]
DBI vs. Con	0.15 [-0.26, 0.55]	0.43 [0.02, 0.84]	0.10 [-0.31, 0.50]	0.02 [-0.39, 0.42]	0.06 [-0.35, 0.46]	-0.10 [-0.50, 0.31]
DBI vs. MBI	0.13 [-0.27, 0.53]	0.05 [-0.36, 0.45]	0.03 [-0.37, 0.43]	-0.16 [-0.56, 0.24]	0.08 [-0.32, 0.48]	-0.03 [-0.43, 0.38]
Escape-Avoidant Coping						
MBI vs. Con	0.21 [-0.16, 0.57]	0.00 [-0.36, 0.37]	-0.21 [-0.57, 0.16]	0.18 [-0.19, 0.54]	-0.07 [-0.43, 0.30]	-0.19 [-0.56, 0.17]
DBI vs. Con	0.27 [-0.14, 0.68]	0.14 [-0.27, 0.54]	-0.29 [-0.69, 0.12]	0.07 [-0.33, 0.47]	-0.18 [-0.58, 0.23]	-0.18 [-0.58, 0.23]
DBI vs. MBI	0.07 [-0.33, 0.47]	0.14 [-0.26, 0.54]	-0.07 [-0.47, 0.33]	-0.13 [-0.53, 0.28]	-0.12 [-0.52, 0.29]	0.02 [-0.38, 0.42]
Self-Compassion <sup>a</sup>						
MBI vs. Con	0.15 [-0.21, 0.52]	0.16 [-0.21, 0.52]	-0.13 [-0.50, 0.23]	-0.11 [-0.48, 0.25]	0.24 [-0.13, 0.60]	0.12 [-0.25, 0.48]
DBI vs. Con	-0.07 [-0.47, 0.34]	-0.13 [-0.53, 0.28]	0.21 [-0.19, 0.62]	-0.04 [-0.44, 0.36]	-0.11 [-0.52, 0.29]	0.20 [-0.21, 0.60]
DBI vs. MBI	-0.23 [-0.63, 0.17]	-0.30 [-0.70, 0.11]	0.35 [-0.05, 0.76]	0.08 [-0.32, 0.49]	-0.38 [-0.78, 0.03]	0.09 [-0.32, 0.49]
ED symptoms						
MBI vs. Con	0.13 [-0.24, 0.49]	0.27 [-0.09, 0.64]	0.61 [0.24, 0.98]**	0.07 [-0.30, 0.43]	-0.03 [-0.40, 0.33]	0.11 [-0.26, 0.47]
DBI vs. Con	0.35 [-0.06, 0.76]	0.29 [-0.11, 0.70]	0.30 [-0.11, 0.70]	0.32 [-0.09, 0.72]	0.20 [-0.20, 0.61]	0.10 [-0.31, 0.50]
DBI vs. MBI	0.23 [-0.18, 0.63]	0.02 [-0.38, 0.42]	-0.32 [-0.73, 0.08]	0.26 [-0.14, 0.66]	0.24 [-0.16, 0.65]	-0.02 [-0.42, 0.38]
Psychosocial Impairment						
MBI vs. Con	0.35 [-0.02, 0.71]	0.43 [0.06, 0.80]	0.59 [0.22, 0.96]**	0.21 [-0.16, 0.57]	-0.08 [-0.44, 0.29]	0.23 [-0.14, 0.59]
DBI vs. Con	0.31 [-0.10, 0.72]	0.24 [-0.17, 0.64]	0.24 [-0.17, 0.65]	0.16 [-0.24, 0.57]	0.22 [-0.18, 0.63]	-0.03 [-0.43, 0.38]
DBI vs. MBI	-0.04 [-0.44, 0.36]	-0.19 [-0.59, 0.21]	-0.37 [-0.77, 0.04]	-0.06 [-0.46, 0.34]	0.32 [-0.09, 0.72]	-0.29 [-0.69, 0.12]

Note. \*\*  $p < .01$ , \*  $p < .05$ ; Bonferroni adjustments applied; MBI = Mindfulness-based intervention, DBI = Dissonance-based intervention, Con = Assessment-only control;

<sup>a</sup> Negative values reflect improvement with respect to comparison condition

### 6.3.4 Program Acceptability

**6.3.4.1 Students.** Means and standard deviations for program acceptability ratings are presented in **Table 6.12**. As can be seen, there were no significant differences between interventions for subjective feelings of improved body image, level of enjoyment, ease of use, or effectiveness. However, MBI participants reported less attention, completion of homework tasks, facilitator confidence, understanding of concepts, and likelihood of continued use, than DBI participants.

Table 6.12  
*Post-Intervention Assessment of Program Acceptability*

Variable	MBI	DBI	<i>t</i> ( <i>p</i> )	<i>d</i>
	( <i>n</i> = 138)	( <i>n</i> = 108)		
	<i>M</i> ( <i>SD</i> )	<i>M</i> ( <i>SD</i> )		
Improvement in body feelings <sup>a</sup>	3.15 (0.73)	3.14 (0.65)	0.10 (.924)	0.01
Enjoyment <sup>b</sup>	2.39 (0.95)	2.50 (1.02)	-0.79 (.433)	0.11
Attention paid <sup>a</sup>	3.03 (0.97)	3.39 (0.88)	-2.86 (.005)	0.39
Homework completion <sup>b</sup>	1.68 (0.92)	2.23 (1.19)	-3.78 (<.001)	0.52
Facilitator confidence <sup>b</sup>	3.89 (1.08)	4.20 (0.87)	-2.25 (.026)	0.31
Understanding <sup>c</sup>	3.58 (1.03)	4.10 (0.97)	-3.83 (<.001)	0.52
Ease of use <sup>b</sup>	3.14 (1.08)	3.32 (1.01)	-1.29 (.200)	0.17
Effectiveness <sup>c</sup>	2.39 (1.08)	2.60 (1.07)	-1.42 (.156)	0.19
Likelihood of continued use	1.94 (1.07)	2.29 (1.10)	-2.36 (.019)	0.32

*Note.* *d* = Cohen's *d*,  $M_2 - M_1/SD_{pooled}$ ; <sup>a</sup>*df*<sub>numerator</sub> = 1, *df*<sub>denominator</sub> = 212, <sup>b</sup>*df*<sub>numerator</sub> = 1, *df*<sub>denominator</sub> = 214, <sup>c</sup>*df*<sub>numerator</sub> = 1, *df*<sub>denominator</sub> = 213

Participants in both interventions reported little use of the techniques over the follow-up period, reflecting a response between *not at all* and *a little*. However, the MBI group (1-month, *M* = 1.45, *SD* = 0.68; 6-month, *M* = 1.35, *SD* = 0.65) reported significantly lower use than the DBI group (1-month, *M* = 1.68, *SD* = 0.88; 6-month, *M* = 1.62, *SD* = .83) at both 1-month,  $t(220) = 2.19, p = .029, d = 0.30$ , and 6-month follow-up,  $t(202) = 2.63, p = .009, d = 0.37$ .

In addition to acceptability ratings, intervention students were asked to

comment on any aspects they liked and disliked about the program. Themes that emerged among liked aspects included the interactive elements (18.2%), informative nature or facts learned (15.2%), visual presentations (13.0%), liking specific techniques (13.0%), the presenter (10.0%), the overall goal of improving body image (9.5%), changed perspective or increased self-reflection (6.9%), finding the program interesting (5.2%), or the supportive environment (5.2%). A small proportion specifically indicated they liked nothing about the program (4.8%), or gave a response unable to be categorised (3.0%). In terms of differences between the two interventions, MBI participants were more likely than DBI participants to report they liked nothing ( $\chi^2 = 6.23, p = .012$ ), and DBI participants more likely than MBI participants to report liking the visual components ( $\chi^2 = 8.07, p = .004$ ), and the factual information ( $\chi^2 = 34.45, p < .001$ ). There were no significant differences between low and high risk groups. When examined by facilitator, there was a higher proportion of participants for one of the four facilitators who reported liking nothing ( $\chi^2 = 22.75, p < .001$ ), and the same facilitator was more likely to have participants who reported liking the group environment ( $\chi^2 = 9.20, p = .027$ ). It is interesting to note that this facilitator was of mature age, and comments from students indicated that they felt this presenter came across like a “kindergarten teacher”, lacked confidence (read from the paper), and appeared to force concepts.

Themes that emerged among dislike comments included the homework or feeling that the program took too much time and interfered with study (22.5%), was not personally relevant or should be aimed at a younger audience (14.3%), boring or uninteresting (13.9%), disliked the techniques or did not find them effective (13.4%), disagreed with the message or concepts (8.7%), wanted more activities or to be more “fun” (11.3%), struggled to understand the concepts (5.2%), made them feel worse

or uncomfortable (5.6%), surveys were too long or confronting (3.9%), found the environment distracting or unhelpful (2.2%) or disliked the presenter (4.8%). A small proportion specifically indicated they disliked nothing about the program (4.3%), or gave a response unable to be categorised (4.3%). Examining differences between conditions revealed that a greater proportion of MBI participants reported concepts hard to understand ( $\chi^2 = 4.35, p = .037$ ), and a greater number of DBI participants cited disagreement with the messages presented ( $\chi^2 = 13.49, p < .001$ ). It is interesting to note that there was also a trend towards a greater number of high risk participants endorsing disagreement than low risk ( $\chi^2 = 3.34, p = .068$ ). High risk participants were also more likely to indicate that there was nothing they disliked ( $\chi^2 = 4.83, p = .028$ ). In terms of facilitator groups, a higher proportion of participants for the same facilitator mentioned above reported wanting the program to be more fun ( $\chi^2 = 9.13, p = .028$ ), and disliking the presenter ( $\chi^2 = 28.85, p < .001$ ).

**6.3.4.2 Teaching staff.** Three of the four teachers returned their program evaluation form. The positive aspects that were identified included the peer reflection around body image, novelty of the mindfulness concepts, and encouraging acceptance of the self, with particular reference to the high levels of perfectionism and self-criticism in senior grades. Similarly, two of the three staff reflected that although the content of both programs were relevant, the dissonance-based intervention concepts (e.g., media literacy) were more familiar by this age and therefore the more novel acceptance and self-compassion concepts were considered more useful. Suggestions for improvement included pitching the interventions at a younger age, using a shorter survey, and refinements for making the mindfulness program more interactive and engaging. Staff reflected moderate to high confidence in their ability to implement these interventions with appropriate training.

## 6.4 Discussion

The current study sought to extend the investigation of a mindfulness-based approach to eating disorder prevention by adapting the programs previously evaluated with young adult females (Chapter 4) for school-based delivery to female senior high school students. The primary objectives were to evaluate intervention efficacy with respect to reducing risk for disordered eating, in both the total sample and for a subset under optimal facilitation; and to assess program acceptability from the perspective of both students and teaching staff.

### 6.4.1 Complete sample

For the total sample, as predicted, findings indicated that both mindfulness and dissonance-based interventions were less powerful in producing benefit across outcomes when delivered universally to large class groups than when delivered to high-risk participants in small groups as in previous trials (Chapter 4; Stice et al., 2006). Of the eleven outcomes assessed, only weight concerns, negative affect, and dietary restraint showed intervention effects significantly different from control, and these differences were only evident among low-risk participants. With respect to weight concerns, low-risk participants in both interventions were significantly lower than control participants at post-intervention and 1-month follow-up assessments; however, only dissonance participants remained significantly lower than control by 6-month follow-up. For both negative affect and dietary restraint, low-risk participants in the dissonance intervention exhibited lower scores than control across all post-intervention and follow-up assessments ( $d = 0.3$ ), whereas mindfulness participants were not significantly different from control. There were no intervention effects observed for the remaining risk factors, or for eating disorder symptoms and psychosocial impairment. Indicators of clinical significance showed relatively small

within-group improvements and numbers of improved people relative to control; however, this is not surprising given that the low-risk participants evidenced scores in the non-clinical range at baseline and thus have less need and scope for change.

The lack of intervention effects among high-risk participants was an unexpected finding given that high-risk participants approximate a selective sample shown to be associated with larger effects (Stice et al., 2007), and that previous studies have generally found stronger results among high-risk participants within universal programs (Dalle Grave, 2003; Raich, Portell, & Pelaez-Fernandez, 2010; Weiss & Wertheim, 2005; Wilksch, 2010b; Wilksch, Durbridge, & Wade, 2008). It is also concerning, given that this group has an increased risk for the development of clinically severe eating disorders and thus it is important to establish that prevention programs are effective in reducing risk in this vulnerable group. It is possible that the present study was underpowered to detect significant effects in the high-risk group, particularly over post-treatment and follow-up assessments where group sizes were below 30 participants. Notwithstanding, the failure to detect an intervention impact in the present study also appears to be influenced by the measurable improvements in the control group that were not evident among low-risk participants. Although within-group effect sizes were larger for high risk compared to low risk participants across most outcomes, indicating greater clinical improvements, the effect sizes observed in the control group were often commensurate with those in the intervention groups, thus leading to limited differences between the conditions.

One reason for comparable effects among high risk participants is that this group likely exhibited a greater regression to the mean across all conditions (due to repeated assessments and natural recovery) given that they scored considerably higher across outcomes at baseline. Thus a greater intervention impact is required in

order to show differences relative to control and permit attribution of effects to the intervention. Moreover, higher standard errors for outcomes among high risk participants indicates a greater variability in the range of received benefit than low-risk participants which may have also contributed to difficulty in obtaining significant group differences. Taking these points together, high risk participants may require a more intensive program, such as could be provided by using smaller groups or increasing dosage through additional sessions or support mechanisms.

An alternative explanation is that significant intervention benefit among high risk participants may have been masked by contamination of the control group, potentially arising from the allocation of all conditions within the same year level. In support, within-group effect sizes for high-risk control participants were large in some cases (e.g., weight concerns, dieting), and arguably greater than could be expected from regression to the mean. It is also conceivable that higher-risk participants would be more likely to discuss the content with their friends than low-risk participants, being more salient concerns, and thus resulting in greater chance for improvements in the control group among high risk participants than low risk participants. Where ethical constraints allow, future studies should therefore aim to eliminate this possibility by randomising by school or whole year levels.

Regardless of these limitations, there were some encouraging signs worth noting. First, universal programs often struggle to produce significant intervention effects for any outcomes (Stice, Shaw, et al., 2007), and particularly those that are maintained through to follow-up as was the case for dissonance in the current study. Additionally, although small, the effect sizes obtained ( $d < 0.41$ ) are consistent with those observed in other universal programs showing effectiveness in reducing risk factors for eating disorders (Richardson & Paxton, 2009; Sharpe, Schober, Treasure,

& Schmidt, 2013; Wilksch, 2010a; Wilksch & Wade, 2009). The effect sizes for mindfulness were also consistent with the only existing universal mindfulness-based prevention program, despite targeting different outcomes (Kuyken et al., 2013). Second, the variables showing significant differences from control (weight concerns, negative affect, and dieting) represent three of the most robust and proximal risk factors for eating disorders (Jacobi & Fittig, 2010; Stice, 2001) and therefore represent vital targets for successful prevention. Third, the pattern of results for weight concerns in particular showed that among low-risk participants, intervention participants maintained a low level of concerns throughout post-intervention and follow-up whereas these concerns increased in the control group. Thus, both interventions show evidence of a primary prevention effect (prevention of symptoms), in contrast to a secondary prevention or early intervention effect (reduction in symptoms), with a superior maintenance of benefit for dissonance participants.

In contrast to the findings reported in Chapter 4 with young adults, these findings provide greater support for the dissonance intervention than for the mindfulness intervention. One likely explanation for the weaker effects noted for mindfulness in the present study is that the intervention was not successful in producing measurable increases in mindful awareness and acceptance over that of the other conditions. Thus any benefit observed may be due to non-specific factors rather than through mindfulness-based intervention *per se*. By way of explanation, findings from Chapters 3 and 4 already indicate that mindfulness can be difficult to engage with and grasp over a short period of time, and this may be particularly compounded when taught in large groups with many potential distractions. Indeed, ratings of acceptability demonstrated that students receiving the mindfulness

intervention reported less understanding, attention paid, homework completion, likelihood of continued use, and time spent using the techniques than dissonance. It is perhaps important to note that the mindfulness-based intervention was a brief application when compared to traditional mindfulness interventions, and that this was a potentially limiting factor to full engagement with mindfulness in this context. Nevertheless, it was interesting to note that teaching staff welcomed the novel content contained within the mindfulness program, feeling that it offered some advantages (e.g., targeting self-criticism in a high-achieving environment) to that of the dissonance program, where some content is already covered within the existing school curriculum. Thus, a mindfulness approach may be a welcome addition in the school environment should future work be successful in increasing engagement, understanding and subsequent efficacy. This will necessarily include attention to increasing the emphasis on mindfulness practice both within the intervention timeframe, and over the long-term.

#### **6.4.2 Facilitator subset**

With respect to the subset of classes analysed to represent effects under optimal facilitation, it was encouraging to observe an improvement in effect sizes overall, as well as the emergence of significant intervention effects that were not present in the whole sample analysis. For mindfulness, post-hoc testing of significant interactions showed an increase in effects over time for reductions in weight and shape concerns, dietary restraint, sociocultural pressures, eating disorder symptoms, and psychosocial impairment, with significant reductions relative to control at 6-month follow-up associated with medium effect sizes ( $d = 0.47 - 0.67$ ). Significant main effects of condition for weight concerns, weight and shape concerns, dietary restraint, and psychosocial impairment also demonstrated the superiority of

mindfulness relative to control across post-intervention assessments combined ( $d = 0.45 - 0.57$ ). There were no significant effects for emotion-related variables.

Although small numbers of participants reflected clinically significant improvements, these results generally supported the between-group analyses, with superiority of mindfulness demonstrated for weight and shape concerns, dieting, and eating disorder symptoms.

These findings compare favourably with previous prevention trials reported in reviews of eating disorder prevention and body image programs, where small effect sizes are often the norm (Stice, Shaw, & Marti, 2007; Yager, Diedrichs, Ricciardelli, & Halliwell, 2013). Additionally, the effect sizes observed at 6-month follow-up are consistent with improvements produced by the dissonance-based intervention at 6-months reported in Stice and colleagues' original DBI trial (2006). This is particularly encouraging given that the current sample included participants across all levels of body image concern, in contrast to Stice et al.'s study, which was conducted with a volunteer sample of high risk participants who likely demonstrated a greater scope for improvement. The occurrence of significant follow-up effects is also an encouraging finding consistent with successful school-based interventions that report an increase in effect sizes over follow-up rather than deterioration (e.g., McVey et al., 2003; Wilksch & Wade, 2009). It also suggests that mindfulness takes time to confer benefit. This supports findings from recent evaluations of school-based mindfulness programs for improving well-being which have highlighted the importance of practicing mindfulness in order to receive benefit (Huppert & Johnson, 2010; Kuyken, et al., 2013). This underscores the need for future evaluations of mindfulness to aid understanding early on, emphasise the importance of practice, and include longer follow-ups to track the full potential of mindfulness to

produce lasting benefit.

With respect to the dissonance-based intervention, the significant interaction for sociocultural pressures showed dissonance participants to be significantly lower than control participants at 6-month follow-up ( $d = 0.59$ ). Significant main effects of condition were also found for weight concerns, in addition to sociocultural pressures, favouring dissonance over control in producing improvements across post-intervention and follow-up combined ( $d = 0.55$  and  $0.57$ , respectively). Indicators of clinical significance also support the greater number of dissonance participants experiencing benefit in weight and shape concerns over control, although the proportions across outcomes were generally low. There were no significant differences with control observed across the remaining risk factors, symptoms, and impairment, despite small effect sizes ( $d < 0.43$ ). The comparatively smaller impact of the dissonance intervention compared to the mindfulness intervention in this subset is an interesting finding given that the opposite was found in the whole sample. It is conceivable that there was an allegiance effect favouring mindfulness as MA was involved in the development of that intervention and arguably had a greater expertise, along with a vested interest in its success. However, given that the acceptability ratings tend towards favouring the dissonance intervention, it seems unlikely that this was the case. The smaller sample size of this subset also demonstrates limited power to detect statistical significance of small effects commonly found in universal trials, which is likely a contributing factor to the lack of significant results for the dissonance intervention.

Overall, and consistent with the hypothesis, stronger effect sizes were observed generally for intervention participants compared to the whole sample with respect to improvements in weight and shape concerns, negative affect, sociocultural pressures,

eating disorder symptoms, and psychosocial impairment; for mindfulness participants on dietary restraint; and for dissonance participants on thin-ideal internalisation. Limited differences between the two samples were observed for less robust risk factors of self-compassion, emotion regulation difficulties, and escape-avoidant coping. These results are in line with the findings from Stice and colleagues' dissonance work, where effect sizes in an effectiveness study (Stice, Rohde, Gau, & Shaw, 2009) were smaller than for the previously implemented efficacy study (Stice, et al., 2006). Although facilitators in the latter received extensive training (including direct observation, opportunity for practice, review of audio sessions and expert supervision), facilitators in the effectiveness study received a single 4-hour training workshop in addition to the manual, similar to that offered to additional facilitators in the present trial. Although the extensive training utilised in efficacy trials cannot always be implemented upon wider dissemination, the trade-off between cost of training and intervention benefit is a necessary consideration for future implementations.

#### **6.4.3 Effects of presenter and delivery format**

When considering the student feedback, it is also likely that presentation style and younger facilitator age also aided the stronger findings in the facilitator subset. In support, familiarity with delivering interactive interventions has previously been noted as a contributing factor to intervention effects (Wade, Davidson, & O'Dea, 2003), and the use of peer facilitators has demonstrated success in recent prevention work (Becker, McDaniel, Bull, Powell, & McIntyre, 2012; Becker, et al., 2010; Stice, Rohde, Durant, Shaw, & Wade, 2013). Although enhancing delivery style can potentially be improved through appropriate training, ultimately it will be important for the selection of facilitators to consider personality, experience, and age

characteristics, with respect to the target audience, in order to maximise the effectiveness of the interventions. This is perhaps particularly relevant to teaching mindfulness, given the collective findings of this thesis has shown to be harder to grasp and engage with at an optimal level. Indeed, proponents of other mindfulness-based interventions have strongly advocated that teachers be active in practicing mindfulness in their own lives in order to facilitate successfully (Segal, Williams, & Teasdale, 2002).

Further work also needs to be done to ascertain the optimal delivery framework and target population for these interventions. A strong theme that emerged through qualitative comments from both students and staff, as well as anecdotal evidence from facilitators, was that the senior students felt they already knew enough about body image and that the programs intruded on their study time. This is likely to be particular to older adolescents in senior grades, and thus the interventions may be received more favourably among younger students. Indeed, universal programs based on dissonance and media literacy with early adolescents have evidenced greater acceptability (Halliwell & Diedrichs, 2013; Wilksch & Wade, 2009). Accordingly, future research may benefit from trialling the programs in a younger age group; although consideration of the capacity to appropriate metacognitive concepts will be important with reference to mindfulness-based interventions. Alternatively, given the preponderance of preconceived ideas regarding body image concerns, future school-based interventions may profit from packaging the content more indirectly as general health and well-being, as suggested with respect to dissemination in Chapter 5. Finally, a strong preference for increased visual and interactive elements suggests that increased attention to enhancing these aspects may result in greater engagement and subsequent intervention benefit.

#### 6.4.4 Limitations

One major limitation of the present study has already been noted, namely, randomising by class within year level and employing no means of assessing the capacity for cross contamination. However, a number of further limitations should be mentioned. First, there were significant student absences across intervention lessons and assessment points. Second, although the majority of control classes received supervised study lessons, it became apparent that at least one of the control classes received a guest speaker on the subject of meditation, which introduced a further source of contamination for the control group. Third, one of the schools had a uniform-free day at post-intervention, and another school had a formal dance that students were preparing for, which may have inflated body image concerns on those assessments. Fourth, it should be considered that participants in the subset analysis may have demonstrated greater demand effects, given that the participants in these classes were aware that MA was the project coordinator. This appears to be somewhat unlikely, given that a strong alliance with the students was unable to be formed in three sessions with large group sizes, and that an advantage for the mindfulness intervention by 6-month follow-up was observed despite demand effects presumably being equal for both interventions. Nevertheless, it is possible that the stronger pattern of results relative to the whole sample may be unrelated to intervention or facilitator characteristics. Fifth, given that models were run separately for each outcome rather than in an omnibus multivariate model, the solitary significant three way interaction in the whole sample may actually represent a false positive finding and therefore should be interpreted with caution. Finally, limitations noted in Chapter 4 are also relevant to the present study, such as the reliance on self-report measures allowing for potential biases and employing a relatively short

follow-up of only 6-months.

#### **6.4.5 Summary**

Overall, despite some positive effects, it is clear that delivery of both dissonance and mindfulness-based intervention to large class-based groups of older adolescents with mixed levels of risk for eating disorders results in reduced effectiveness. Given the lack of superiority of interventions over control among higher-risk participants, in addition to modest acceptability ratings, implementation of these interventions – and mindfulness in particular – in this manner and to this age group is not recommended. However, a potential caveat may exist when appropriately trained and experienced facilitators deliver the interventions. Nevertheless, these findings need replication using a larger sample and employing a longer follow-up period, in order to substantiate intervention effects and determine their long-term utility. Future work will also be benefited by evaluation in younger adolescents, as well as efforts to enhance acceptability and efficacy by improving engagement and understanding, such as increasing visual and interactive elements, and tempering the direct body image agenda.

## **Chapter 7.**

### **General Discussion**

#### **7.1 Overview**

The following discussion provides an integration of findings across the set of research studies undertaken in this thesis in order to highlight contributions to the field of eating disorder prevention. A summary of findings is first presented in the context of previous research, combined with implications for prevention work. Methodological limitations are then considered, together with directions for future research. A particular emphasis on mindfulness is made throughout in order to draw conclusions regarding its utility as a prevention strategy.

#### **7.2 Summary and Implications of Findings**

The primary objective of the present research was to develop and evaluate a new mindfulness-based prevention program for reducing the risk of eating disorders in young women. Specifically, the aim was to target multiple risk factors simultaneously by teaching mindfulness as a mechanism for managing negative body-related experiences, with a particular focus on body dissatisfaction and negative affect. This is an important goal given that targeting multiple risk factors has been recommended as an avenue for increasing intervention effects (Stice, Becker, et al., 2013; Stice, South, et al., 2012), and that weight and shape concerns and negative affect represent robust and well-replicated predictors of disordered eating (Jacobi & Fittig, 2010) and occupy proximal positions in the dual pathway model of eating pathology (Stice, 2001). However, previous research with negative mood indicated sub-optimal engagement with a key component of mindfulness practise, metacognitive acceptance, leading to reduced intervention effects (Singer & Dobson, 2007, 2009). Consequently, it was important to first investigate engagement

with metacognitive acceptance in the context of reducing body dissatisfaction and negative affect, and to incorporate this knowledge in the design of program content in order to maximise potential benefit.

### **7.2.1 Engagement in Metacognitive Acceptance**

Consequently, engagement in metacognitive acceptance and its subsequent efficacy with respect to reducing key risk factors was investigated in an experimental design with 80 female first-year psychology students. In terms of intervention effects, results indicated that metacognitive acceptance training significantly improved weight and appearance satisfaction consistent with prior work (Wade et al., 2009), and additionally showed a similar beneficial impact on negative affect. Although non-engagers demonstrated significant benefit along with engagers, the absence of a follow-up assessment denies the ability to determine whether this was a temporary effect as might be expected. Post-hoc assessment of engagement indicated that those with increased negative affect, emotion regulation difficulties, and an avoidant coping style were most likely to fail in engaging optimally with the acceptance technique. However, participants higher on these measures, in addition to those with lower mindfulness, were also most likely to show the greatest benefit of acceptance training with respect to improvement on negative affect. These findings provided initial support for the effectiveness of an acceptance-based strategy to impact multiple risk factors, with particular benefit for higher-risk individuals as has been highlighted in previous work (Stice & Shaw, 2004; Stice, Shaw, et al., 2007). It additionally highlighted the importance of assisting those with greater emotion-related difficulties to engage optimally in mindfulness techniques in order to increase the potential for a larger and more sustained impact.

### **7.2.2 Efficacy of Mindfulness in a Selective Population**

On the basis of these findings, a more substantive prevention program was

developed that centred on key mindfulness concepts and included initial content aimed at increasing emotional awareness of body image experiences and the disadvantages of common coping strategies such as avoidance. This 3-session program was evaluated with respect to reducing risk for eating disorders in a high-risk sample of young women experiencing body image concerns, in comparison to an empirically supported dissonance-based intervention (Stice et al., 2006) and an assessment-only control condition. Comparing conditions at post-intervention and follow-up assessments showed that mindfulness produced greater short-term improvements in weight and shape concerns ( $d = 0.86$ ), dietary restraint ( $d = 0.93$ ), thin-ideal internalisation ( $d = 1.22$ ), eating disorder symptoms ( $d = 0.87$ ) and related psychosocial impairment ( $d = 0.90$ ) relative to control, with large effect sizes. However, these effects largely faded over follow-up, and may be related to greater difficulties with understanding and engagement. Medium size effects were found for negative affect ( $d = 0.64$ ) and emotion regulation difficulties ( $d = 0.72$ ) and, although less reliable given the small sample size, these remained present at final 6-month follow-up. Effect sizes obtained at post-intervention were consistent with other successful prevention research with young adult females (Becker et al., 2010; Stice et al., 2006; Taylor et al., 2006).

In contrast, despite successful outcomes for previous dissonance work (e.g., Becker et al., 2010; Stice et al., 2006), dissonance participants did not show significant improvements relative to control on any outcomes, although small to moderate effect sizes ( $d = .21 - .74$ ) suggest differences would have been significant in a larger sample. The reduced effectiveness of the dissonance program may be due to differences in delivery format and facilitator training with previous trials. Cultural differences with previous implementations may also have contributed, highlighting the importance of validating interventions cross-culturally.

Overall, these findings provide promising support for the use of mindfulness; however, further work is necessary to improve maintenance of effects in order for it to be considered a viable prevention approach. In particular, attention needs to be given to aiding understanding and engagement as this presents a barrier to broader dissemination. These findings additionally suggest that dissonance may not be the best approach for high-risk young adult women in Australia. However, it must be stressed that confidence in these findings and subsequent conclusions is severely limited by the small sample obtained. Thus, the efficacy of both programs was further investigated in a larger sample provided by semi-mandatory participation within a high-school setting.

### **7.2.3 Efficacy of Mindfulness in a Universal Setting**

Both mindfulness and dissonance-based interventions were therefore adapted for school-based delivery and evaluated in a cluster randomised controlled trial with 376 female senior high school students. Interventions were delivered to large class groups of mixed risk status (universal), and by four different facilitators. Overall, results indicated a less powerful impact of both interventions when compared to the above evaluation with young adults, and to the original efficacy trial of dissonance (Stice et al., 2006), which is understandable given that universal programs have traditionally found smaller effects than selective programs (Stice, Shaw, et al., 2007). Nevertheless, significant effects of condition across post-intervention and follow-up were found for important risk factors of weight concerns, negative affect and dieting, favouring dissonance over control in all instances. The small effect sizes were consistent with other universal prevention programs (Richardson & Paxton, 2009; Sharpe et al., 2013; Wilksch & Wade, 2009).

However, the absence of intervention benefit for high-risk participants is a concern and indicates that this group is likely to require greater intervention than

what can be achieved in a universal setting. Indicators of clinical significance similarly demonstrated reduced effectiveness of both interventions in producing very small numbers of intervention students demonstrating practical improvements in risk outcomes over that of control. In addition, only moderate acceptability was demonstrated among students, who reflected themes such as limited relevance of a specific body image intervention at their age, the intrusion it represented to their study, and the desire for increased visual and interactive elements. Thus, despite small benefits to key risk outcomes, these findings demonstrate the limited usefulness of both interventions, and mindfulness in particular, when delivered in this manner. Still, given previous findings showing that the use of dedicated interventionists is associated with greater outcomes (Stice, Shaw, et al., 2007), additional analyses were conducted using only the classes taught by the author in order to approximate intervention effects that could be achieved under appropriately trained and experienced facilitators.

#### **7.2.4 Facilitator Expertise as a Moderator of Intervention Effects**

Results from this subset of 156 students showed greater effect sizes than for the whole sample across key outcomes for both interventions. Encouragingly, mindfulness participants were shown to have significantly greater improvements than control at 6-month follow-up on measures of weight and shape concerns ( $d = 0.65$ ), dietary restraint ( $d = 0.67$ ), sociocultural pressures ( $d = 0.47$ ), eating disorder symptoms ( $d = 0.61$ ), and psychosocial impairment ( $d = 0.59$ ), with effect sizes generally consistent with those reported over the same time period in Stice et al. (2006). The dissonance intervention was also superior to control in producing post-intervention benefit with respect to the screening measure of weight concerns ( $d = 0.55$ ) and sociocultural pressures ( $d = 0.57$ ). Across outcomes, the pattern of results revealed a tendency for dissonance to act quickly in producing effects at post-

intervention that were maintained through to follow-up; however, the effects of mindfulness started smaller and increased over time. This highlights the importance of time and continued practice of mindfulness, which has been highlighted in previous mindfulness-based prevention work (Huppert & Johnson, 2010; Kuyken et al., 2013). It also emphasises the need for further follow-up assessments to ascertain the full impact of this intervention over time. Taken together, these findings indicate that the benefit of delivering interventions to large class groups of mixed risk status can be improved with appropriate facilitator selection and training.

### **7.2.5 Investigation of Voluntary Participation in Body Image Interventions**

As well as extending the evaluation of these interventions to high school students, it was also important to explore reasons for the lack of uptake into the initial intervention trial to order to assist future research and dissemination. The low rate of recruitment leading to a small sample was somewhat unexpected given the salience of body image concerns among young women in Australia (Mission Australia, 2011), and that the interventions were relatively brief and being offered free of charge and accessible on campus. An assessment of voluntary participation in the trial among 124 female first-year psychology students representative of the target demographic was therefore undertaken. Results indicated that interest and likelihood of participation was low overall and lack of time the most commonly endorsed reason (76% of participants). Participants high on weight concerns (high-risk) were more likely to cite the group format of the intervention as a deterrent. A greater belief in the helpfulness of body image programs and higher personal ineffectiveness were significant predictors of interest in participation; however no body related variables were associated. A motivational enhancement exercise was not successful in producing increased interest and likelihood of participation over a control group. These findings suggest the importance of time-flexible delivery of interventions and

reducing the potential for stigmatisation for increasing uptake into prevention programs, as well as strategic marketing efforts such as highlighting specific benefits and supporting evidence for intervention strategies, emphasising opportunities for increased personal effectiveness, and avoiding recruitment appeals based on body image alone.

### **7.2.6 Summary**

In summary, these findings show the current mindfulness-based program to produce improvements in risk factors, relative to control, over the short-term among high-risk young adult women, and over a 6-month period among senior high schools students under appropriate facilitation. The potential for benefit from mindfulness training is increased by accommodating emotion-related difficulties to enhance engagement, and ensuring that facilitators have the requisite knowledge and experience to engage the recipients successfully. Future dissemination will be improved through reducing demands on time and the potential for stigmatisation, in addition to strategic marketing decisions.

## **7.3 Methodological Considerations**

The current body of work reflects a number of strengths that are considered essential for methodologically rigorous prevention trials (Stice, South, et al., 2012), such as targeting theoretically and empirically established risk factors, employing validated measures, including an active comparison in addition to control, assessing intervention fidelity, and including follow-up to 6 months. Evaluation across studies additionally enabled a comparison of effects between young adults and older adolescents, and between selective and universal approaches. Nevertheless, there are a number of methodological issues that have bearing on the interpretation of the results and are therefore important to discuss.

### **7.3.1 Low Power**

A major limiting factor was the small sample size for the evaluation with young adults (Chapter 4) as it diminished the capacity to detect significant group differences, and therefore intervention superiority, and reduced the reliability of the size of effects obtained. A similar issue with sample size also potentially reduced the ability to detect significant effects among the high risk sample in the high school intervention study (Chapter 6). Thus, replication of these studies with larger samples is required in order to draw firm conclusions. However, challenges to obtaining sufficient samples are common in eating disorder prevention trials, often resulting in financial compensation (e.g., Stice et al., 2006), course credit (e.g., Matussek et al., 2004), or semi-mandatory participation (e.g., Becker et al., 2010). The reasons for the small sample in the present research were explored in Chapter 5, and implicated time constraints and stigmatisation as prohibitive factors. Therefore the capacity to obtain a larger sized sample for further evaluation is likely contingent upon incentivising participation or making adaptations to delivery format and marketing of interventions. The impact of such approaches in an Australian setting should be explored before further large scale studies are attempted in order to maximise the power of costly efficacy studies.

### **7.3.2 Potential Selection Bias**

Recruitment for the high school study described in Chapter 6 was somewhat restricted by schools already having body image or well-being curriculum in place, which is a potentially positive sign, although the specific benefit of this content is unknown as these programs were not associated with an evidence base with respect to efficacy. Among the schools that agreed to participate, a further reduction to the final sample arose due to the use of opt-in consent (students are required to have parental consent in order to allow the researcher to use the data for research) as

opposed to passive consent (students are automatically included unless parents provide direct refusal of consent). Although the latter was suggested by at least two of the participating schools as they were aware of the tendency for students and parents to be negligent with regard to returning forms, opt-in consent was an ethical requirement for this trial and likely to be required in future trials conducted in Australia. Although all private and independent girls' schools in Adelaide were approached, future trials should be able to procure a wider range of participants by including multiple year levels at each school, and extending into government-funded public schools and co-educational settings.

### **7.3.3 Intervention Development and Delivery**

Although care and deliberation was taken in the selection and construction of the two interventions, certain points need to be addressed as limitations when evaluating their effectiveness. With regard to the mindfulness-based intervention, there existed only minimal mindfulness meditation due to the desire of creating a short program conducive to a prevention context, and therefore it may have been restricted in producing a meaningful mindfulness attitude. Thus the capacity of a traditional comprehensive mindfulness approach to reducing eating disorder risk remains unknown – it is possible that intervention effects may be improved with the incorporation of increased opportunity for meditation. With respect to the dissonance-based intervention, it is necessary to highlight that the facilitator (author) did not receive formal training in delivering dissonance interventions, or *The Body Project* in particular. Additionally, adaptations were made to the recommended delivery format for the school-based trial due to practical requirements. Both of these points are likely to have contributed to reduced effectiveness of the dissonance-based intervention in the current research. A final point to note for both interventions is that three sessions, although appropriate for small group delivery, may not have been

sufficient to confer benefit in a universal class-based setting, particularly with regard to high risk participants.

#### **7.3.4 Demand Effects and Response Biases**

In addition to reduced sample sizes, practical constraints pertaining to time and resources resulted in an additional limited ability to control for the potential impact of demand effects. First, the author was responsible for multiple components of the research such as screening participants, informing participants of their group allocation, and delivering both interventions. Thus it was not possible to be blinded to group allocation as recommended in CONSORT guidelines for randomised controlled trials (Boutron, Moher, Altman, Schulz, & Ravaud, 2008). As such, future trials should aim to separate these roles where feasible in order to reduce the potential for bias. Additionally, participants were not able to be blinded to their group allocation due to their need to participate in the interventions or normal lessons (control). Although the impact of this was somewhat contained by not informing participants of their allocation until after baseline assessment, the potential for differential demand effects over time cannot be discounted. Thus, the use of a placebo control condition in addition to a “do nothing” control may help to alleviate this problem in future.

Second, the exclusive use of self-report for assessing risk factors, symptoms, and psychosocial impairment across all studies further allows for potentially biased data. This was perhaps most apparent in the high-school trial where it was observed that many students seemingly gave answers without reading the question, consulted with surrounding students, and did not know their height and weight (impacting on the assessment of BMI). Additionally, scheduling of follow-up assessments coincided with a non-uniform day in one school, and a formal dance in another school, which may have served to inflate the severity of outcomes at those time-

points. As such, future research should aim to include different sources of measurement less vulnerable to demand effects such as diagnostic interviews conducted by independent assessors, as well as assessment of state measurements at more frequent intervals (e.g., using the Visual Analogue Scales used in Chapter 3). Additionally, the assessments were long and thus there may have been an element of responder fatigue. Thus, it may be worth prioritising measures and shortening the overall length, particularly for use with adolescents.

### **7.3.5 Length of Follow-up**

Due to time constraints, follow-up for both trials was limited to 6-months. Although this is sufficient for determining short-term and intermediate effects, longer-term follow-up is required for monitoring the full extent of improvements possible of these intervention strategies, and their capacity to continue offsetting risk of eating disorders into the future. This is particularly important for adolescent populations, who may not exhibit risk at the time of intervention but who may develop concerns at a later date. Thus, follow-up should ideally be implemented throughout the entire risk period into young adulthood. This is reinforced by the trajectory of improvement noted for mindfulness in the facilitator subset, which indicated the potential for continued improvements subsequent to the 6-month assessment that can only be ascertained through additional follow-up assessments.

### **7.3.6 Selection and Training of Facilitators**

A final limitation pertaining specifically to the school-based trial was that the selection and training of facilitators was restricted by the necessity of using available postgraduates and the short time available prior to commencing the interventions. Therefore these findings may underestimate the true potential of both dissonance and mindfulness-based approaches in a high school context. Indeed, the stronger findings observed in the author subset compared to the whole sample supports the importance

of careful selection and training of facilitators for delivering prevention programs that has been highlighted previously (Stice, Butryn, Rohde, Shaw, & Marti, 2013; Stice, Rohde, et al., 2011; Stice, Shaw, et al., 2007). These findings suggest that facilitators need additional content-specific training prior to the delivery of interventions, such as opportunities for role-playing and practice of delivery, as well as observation of teaching with feedback. Additionally, facilitators should be comfortable with, and experienced in, delivering interactive programs and able to relate to adolescents with ease. Based on the qualitative feedback of some students, it may be ideal if facilitators are closer in age to the participants in order to facilitate connection, such is evidenced in successful peer-led interventions based on dissonance induction (Becker et al., 2012; Becker et al., 2010; Stice, Rohde, et al., 2013). Consideration of these factors will profit further evaluations of prevention programs in this context.

#### **7.4 Directions for Future Research**

In addition to the above suggestions to overcome methodological and practical limitations, a number of further recommendations for future research in eating disorder prevention can be made based on these findings.

##### **7.4.1 Target Age**

Although intervention effects for eating disorder prevention programs have been shown to be larger in female participants over the age of 15 (Stice et al., 2007), the current research demonstrates that this needs to be considered in the context of the delivery conditions, given the reduced effectiveness of both interventions with older adolescents aged 15 to 18. Feedback from both students and teachers indicates two potential contributors to limited engagement and acceptability regarding the current program which likely led to reduced intervention effects: the high priority of study in senior grades and the limited perceived relevance of body image content at

this age. Nevertheless, successful implementation of prevention programs within the school environment remains an important endeavour as it provides ready access to those that may otherwise not receive intervention, and enables an increased chance of reaching people before ideas about body image become entrenched. With respect to the latter point, it may prove more useful to evaluate these programs with a younger age group. Indeed, a systematic review of school-based body image interventions showed that all programs considered effective were conducted with younger adolescents aged 12 to 13 (Yager et al., 2013) compared to those targeted at ages 14 to 16 (no studies were included that used participants aged over 16 years). Additionally, a recent school-based trial conducted in the United Kingdom with 12-year-old girls has already shown promising results for dissonance (Halliwell & Diedrichs, 2013), although the absence of follow-up assessments restricts conclusions to a preliminary nature, as has a mindfulness intervention with 12-16 year olds, where risk factors pertinent to disordered eating were not assessed (Kuyken et al., 2013). Thus, there is evidence to suggest that further evaluation of both dissonance and mindfulness among younger participants may be successful, where factors of intrusion to academic pursuits and preconceived ideas about body image are less likely to be salient issues. This is additionally pertinent given evidence of impacts on body image disturbance as early as age 6 (Dohnt & Tiggemann, 2006; Ricciardelli & McCabe, 2001).

An advantage of using a pre-adolescent or early adolescent population is that it better enables an assessment of mindfulness as a primary prevention strategy. However, two considerations for further evaluation with a younger age group should be taken into account. First, program content will need to be refined in order to adhere to the principle of 'first, do no harm' (O'dea, 2000), given that younger participants are more likely to be unaware of weight control practices and pressures

to conform to appearance ideals, and to increase engagement and understanding. The latter point is particularly pertinent for mindfulness intervention, where metacognitive concepts will need to be disseminated in a way that is sensitive to the appropriate stage of cognitive development. Second, as highlighted above, evaluation in young participants would need to include extensive long-term follow-ups in order to monitor impact through the period of greatest risk, which has been shown to increase throughout adolescence (Allen et al., 2013; Stice, Marti, et al., 2013).

#### **7.4.2 Intervention Characteristics**

Regardless of the age of recipients, these findings have highlighted the need to adapt the current mindfulness-program in order to increase benefit, with a focus on maintenance of effects and assisting high-risk participants, and to facilitate the likelihood of greater uptake and therefore ease of dissemination. In particular, the importance for increased practice of mindfulness has been highlighted. This could include inclusion of longer or more regular and reinforced mindfulness meditations, as well as concentrating efforts on encouraging the continued practice of mindfulness techniques following the completion of the intervention. The latter may be done initially by facilitating the adoption of mindfulness-based acceptance as a lifetime strategy, discussing the specific benefits of continued practice and emphasising ideas for overcoming barriers. It will additionally be important to foster a sense of intrinsic motivation towards this through voluntary identification of importance and individual benefits, and highlighting participant successes throughout the program, as this is likely to keep participants motivated long-term. It will also be important to ensure that techniques that are included are easy to maintain over the long-term. Consequently, long mindfulness-based meditation tasks are not recommended in a prevention context.

An additional means to increasing the likelihood of continued use is to offer

an online presence for reminding participants of concepts and encouraging practise of the techniques, such as may be achieved through smartphone applications and social networking. Compared to booster sessions, such approaches have the advantage of being relatively low-cost and easier to maintain as they primarily involve a one-off setup, can be automated (applications) and participant driven (social networking). In addition, they are least likely to be considered intrusive, and can be expected to be more attractive to the current generation of interest who utilise such technologies daily.

A second consideration for improved benefit is to increase program length from three sessions in order to allow for greater engagement with and retention of counter-intuitive concepts. Qualitative and anecdotal feedback from young adults (and select high school students) indicated that they would have liked the program to be longer. In a similar way, Stice and colleagues extended and enhanced their original dissonance program, now consisting of four weekly sessions, which has shown positive results in recent trials (Stice, Butryn, et al., 2013; Stice, Rohde, et al., 2009). Yager et al.'s (2013) review of school-based programs reported an average of five hours of programming for interventions considered to be effective, although also suggested that longer programs were not necessarily more effective with respect to improving body image. Moreover, given time constraints for both individual participants and high schools trying to fit such programs into busy schedules, it remains in the best interest of consumers to keep preventive interventions as brief as possible. Thus, any extensions will likely to be dependent on the delivery format and target audience.

Another avenue to increasing intervention effects is to augment the existing program content. One suggestion is to include further activities based on positive psychology concepts that dovetail with an attitude of mindfulness, such as a

consideration of personal strengths, identifying daily positives, and practicing gratitude, in order to increase awareness of positive aspects of functioning and enhance psychological flow (Seligman, 2012). Such activities may be particularly useful for directly improving negative affect, which demonstrated smaller effects in the current research than expected given the aim of using mindfulness to specifically target negative thoughts and feelings. An emphasis on optimal functioning may also serve to increase self-efficacy and personal effectiveness, which may increase likelihood of continued use and can also be cited among potential benefits in the marketing phase. Such positive activity interventions have been included in a recent universal prevention program which has shown promising results with younger adolescents, although the specific impact of these tasks is unknown given the multi-component format (Sharpe et al., 2013). An additional benefit with increased efforts at improving negative affect and self-efficacy is the potential flow-on effects for other related psychological concerns such as depression and anxiety. This is significant in light of recommendations to target multiple health problems (Stice, South, et al., 2012). Thus, the transdiagnostic potential of a mindfulness prevention program could be explored in future research.

An additional consideration for expanding program content may be to offer additional cognitive training activities to enhance executive control and psychological flexibility, such as those contained within metacognitive and cognitive remediation treatments (e.g., Tchanturia, Lloyd, & Lang, 2013). These may assist in improving metacognitive capacity and therefore work together with mindfulness practice to reduce automatic responses and encourage adaptive emotion regulation. These activities are often interactive and engaging which could also help to improve this aspect for delivery with adolescents. Additionally, such tasks may be particularly suited for homework and ongoing use subsequent to program completion in order to

optimise intervention benefit long-term.

A final consideration with respect to intervention content is the potential for combining approaches in multi-faceted programs. Although it is critical to ascertain the effects of specific approaches in order to determine their unique contribution to intervention benefit, a potential next step for increasing the capacity to target multiple risk factors could be to use mindfulness in conjunction with other approaches also proven to be effective. For example, future efforts may like to consider a combination of mindfulness with media literacy, dissonance induction, and consideration of peer influences. This may also increase the chances of a greater number of individuals receiving benefit from a single intervention, considering that individuals are likely to engage differently across a variety of techniques.

#### **7.4.3 Methods for Dissemination**

Along with adaptations to the intervention itself, the present findings have demonstrated the need for dedicated efforts to increase uptake into such programs. Chapter 5 has already outlined the potential benefits of internet-based programs for achieving time-flexible delivery that reduces the potential for stigmatisation, and is supported by previous successes (Beintner, Jacobi, & Taylor, 2012; Taylor, et al., 2006). The present findings indicate that the group context may be particularly important for dissonance based programs, which may have contributed to smaller effects for an internet adaptation of the original DBI, *The Body Project* (Stice, Rohde, Durant, & Shaw, 2012). However, mindfulness is naturally an internal process and thus may be better suited for internet adaptation, but with a caveat to improve safeguards for assisting compliance and retention difficulties observed in other online implementations (Bauer, Moessner, Wolf, Haug, & Kordy, 2009; Lindenberg, Moessner, Harney, McLaughlin, & Bauer, 2011). Borrowing once again from motivational research may help in this regard, in addition to ensuring that the

intervention is sufficiently engaging to sustain interest.

Another consideration for future research is to better utilise the internet as a mechanism for recruitment and promotion. A study exploring recruitment methods for a depression prevention program (Morgan, Jorm, & Mackinnon, 2013) found that paid advertising via Google was the most effective, particularly in conjunction with a short screening questionnaire for depressive symptoms. As such, attracting attention via a quiz or video followed by program information may prove more fruitful than simple appeals based on body image. Short activities such as these are easily disseminated via the internet and can reach a large number of people within a short period. This may also be an appropriate setting to assess a short cognitive dissonance-based exercise to increase participation, to extend the experimental strategy employed in Chapter 5. Future research may like to build in comparisons of recruitment strategies into the recruitment process for prevention trials in order to provide useful information regarding the best approach for widespread dissemination.

An additional means towards effective dissemination suggested by these findings is in the strategic marketing of interventions, including the emphasis on potential benefits and evidence as previously mentioned. The desire to avoid stigmatisation, in addition to the relative unimportance of body concern in determining participation among undergraduates, and the sole focus on body image proving irrelevant to selections of students in a universal setting, suggests that it may be prudent to refrain from promoting programs as body image interventions under certain circumstances in order to increase greater uptake. Thus, packaging interventions more generally as well-being programs may be beneficial. This may be particularly helpful for dissemination to universal populations such as high schools, where participants who may not currently evidence specific body image concerns can

still benefit. Alternatively, a potentially valuable approach is to integrate different strategies with differing target audiences in a scaffolded approach to prevention. For instance, commencing with a public health campaign has the potential to initiate change at a systemic and environmental level (Austin, 2012), which can be followed by universal programs for targeting risk factors in conjunction with improving overall well-being, and then finally, offering intensive targeted programs for those identified as high-risk candidates. Although it is acknowledged that such an approach requires considerable planning, resources, and buy-in from stakeholders, it nevertheless has the potential for covering as many bases as possible in the pursuit of successful prevention for eating disorders. Although a two-stage prevention programs utilising both universal and selective programs had significant difficulty in recruiting high-risk participants for the second stage (Varnado-Sullivan et al., 2001), it can be noted that the targeted program offered required face-to-face contact for both students and parents. Thus, further evaluation of combined universal and selective approaches are encouraged, with efforts to incorporate previously mentioned efforts to reducing time constraints and stigmatisation.

## **7.5 Conclusion**

This thesis has contributed to the existing eating disorder prevention literature via three major avenues based on earlier recommendations for prevention research: evaluating novel program content targeting multiple risk factors for eating disorders, assessing moderators of intervention impact, and exploring methods for facilitating widespread dissemination. Overall, findings provide enough support for continued evaluation of mindfulness in a prevention context; however, further work is required to substantiate findings and ascertain the ideal target audience and delivery format before it can be considered a viable approach for dissemination. Findings additionally identified the importance of targeting emotion-related difficulties within

program content, ensuring appropriate selection and training of facilitators, and dedicating increased efforts to facilitate uptake into interventions, in order to ensure the best possible chance of providing benefit to those most at risk of developing an eating disorder.

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## **Appendix A**

### **Participant Information and Consent Forms**

## Appendix A1



### Participation Information and Consent for the Study of

### Engagement

#### PARTICIPANT INFORMATION SHEET:

#### ADVERTISING AND HOW YOU FEEL ABOUT YOURSELF

What is the purpose of the research? The purpose of the current study is to examine the ways in which advertising affects the way we feel about ourselves and whether the way we respond to these feelings can influence the impact of advertising.

Who is doing this research? The research is being conducted under my supervision by Melissa Atkinson, a PhD student in the School of Psychology at Flinders University – she can produce her student card, which carries a photograph, as proof of identity.

What does this research involve? There are five components of this research. First, there is an initial assessment where you will be asked to fill out questionnaires about some of your everyday experiences, how you cope with unpleasant thoughts, and how you feel about your body. Second, you will be looking at advertising images and be asked questions about these images. Third, some of you will be randomly allocated (i.e., as in the toss of a coin) to a way of responding to the media images, and will receive training in this approach. Others of you will not receive this training. Fourth, you will then be asked to use the response method that you received training in (if you received such training). Finally, we will ask you to complete some final questions and we will also explain the research to you in greater detail. No more than 1 hour of your time on a single occasion would be required.

Participation is voluntary. Your participation in the study is entirely voluntary and you have the right to withdraw from the study at any time. If you, as a participant of this research, suffer injury, compensation may, at the discretion of Flinders University, be paid without litigation. However, compensation is not automatic and you may have to take legal action in order to receive payment. In accordance with usual practice, study results become the property of the researchers and will be published in scientific journals at a later date. All records containing personal information will remain confidential and no information that could lead to your identification will be released.

Questions about this project? Should you have any questions about the project, either before, during or after the study, you may contact Professor Tracey Wade in the School of Psychology at Flinders University, using the contact details in this letterhead. Thank you for your attention and assistance.

Professor Tracey Wade, School of Psychology, Flinders University

*This research project has been approved by the Flinders University Social and Behavioural Research Ethics Committee (Project Number 4811). For more information regarding ethical approval of the project the Executive Officer of the Committee can be contacted by telephone on 8201 3116, by fax on 8201 2035 or by email [human.researchethics@flinders.edu.au](mailto:human.researchethics@flinders.edu.au).*

### Consent Form for Participation in Research

(by experiment)

I .....

**being 18 years of age or older** hereby consent to participate as requested in the participant information sheet for the research project on a brief intervention for body dissatisfaction.

- 1. I have read the information provided.
- 2. Details of procedures and any risks have been explained to my satisfaction.
- 3. I am aware that I should retain a copy of the Information Sheet and Consent Form for future reference.
- 4. I understand that:
  - I may not directly benefit from taking part in this research.
  - I am free to withdraw from the project at any time and am free to decline to answer particular questions.
  - While the information gained in this study will be published as explained, I will not be identified, and individual information will remain confidential.
  - Whether I participate or not, or withdraw after participating, will have no effect on any treatment or service that is being provided to me, my progress in my course of study, or results gained.

**Participant's signature.....Date.....**

I certify that I have explained the study to the volunteer and consider that she/he understands what is involved and freely consents to participation.

**Researcher's name.....**

**Researcher's signature.....Date.....**

## Appendix A2

### Participant Information and Consent for the RCT with Young Adults



#### PARTICIPANT INFORMATION SHEET

Professor Tracey Wade

School of Psychology

Flinders University

GPO Box 2100

Adelaide SA 5001

Tel: 08 8201 3736

Who is doing this research? This letter is to introduce Melissa Atkinson who is a PhD student in the School of Psychology at Flinders University. Melissa is undertaking research leading to the production of a thesis or other publications on decreasing body image concerns, under the supervision of Professor Tracey Wade.

What is the purpose of the research? The purpose of the current study is to assess the effectiveness of programs aimed at helping young women feel better about themselves. The results will help in developing successful prevention and treatment for those struggling with their body image.

What does this research involve? After an initial assessment where you will be asked to fill out questionnaires about some of your everyday experiences (examples of questions can be viewed over the page), you will be randomly allocated (i.e., as in the toss of a coin) to either one of two body image programs or an assessment only condition. The body image programs will consist of 3 weekly 1-hour sessions plus homework tasks and will teach different strategies for dealing with body image concerns. If you are allocated to the assessment only condition you will receive the content of both programs at the completion of the study. You will also be asked to complete the same set of questionnaires 1 month and 6 months after completing the program. Overall, three 1-hour sessions based at Flinders University and four 45 minute sessions at a computer of your choice will be required of you.

Participation is voluntary. Your participation in the study is entirely voluntary and you have the right to withdraw from the study at any time. If you would like to seek further assistance, a list of free services (see over the page) will be provided. In accordance with usual practice, study results become the property of the researchers and will be published in scientific journals at a later date. All records containing personal information will remain confidential and no information that could lead to your identification will be released.

Questions about this project? Should you have any questions about the project, either before, during or after the study, you may contact Professor Tracey Wade, using the contact details in this letterhead, or Melissa Atkinson ([melissa.atkinson@flinders.edu.au](mailto:melissa.atkinson@flinders.edu.au)) in the School of Psychology at Flinders University. Thank you for your attention and assistance.

Professor Tracey Wade, School of Psychology, Flinders University

*This research project has been approved by the Flinders University Social and Behavioural Research Ethics Committee (Project Number 4957). For more information regarding ethical approval of the project the Executive Officer of the Committee can be contacted by telephone on 8201 3116, by fax on 8201 2035 or by email [human.researchethics@flinders.edu.au](mailto:human.researchethics@flinders.edu.au).*

## EXAMPLE QUESTIONS

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**Please note, responses to all questions will be collected in written format and will not be able to be identified.**

Select the extent to which you agree with the following statements:

*TV programs are an important source of information about fashion and being attractive.*

*I am not a worrier.*

Decide how often each of the following items is true about you:

*I think that my stomach is too big.*

*When I'm walking, I deliberately notice the sensations of my body moving.*

*Do you try to eat less at mealtimes than you would like to eat?*

*I experience my emotions as overwhelming and out of control.*

Over the past 28 days:

*Have you had a strong desire to lose weight?*

*How many times have you eaten what other people would regard as an unusually large amount of food (given the circumstances)?*

*Has your weight influenced how you think about (judge) yourself as a person?*

## OTHER SERVICES

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If there are any body image issues or other issues that you would like to discuss with someone, please do not hesitate to contact the following services:

**Flinders University Student Counselling** 8201 2117

**Flinders University Services for Eating Disorders** 8201 5563

(or see the associated website,

<http://www.socsci.flinders.edu.au/psyc/staff/TraceyWade/Eating%20Disorder%20Treatment/what%20treatments%20are%20offered.php> )

**ACEDA (Anxiety, Compulsive and Eating Disorders Association)** 8237 4011

(or see the associated website, <http://www.aceda.org.au/general/eating-disorders-support-service.html>, or email [support@edasa.org.au](mailto:support@edasa.org.au))

**ACIS: Assessment and crisis intervention services (8am – 10.30 pm)** 131 465

**Women's Health Statewide** 8239 9600

1300 882 880

**Life Line: 24 hour service telephone counselling** 131 11

## Consent for Participation in Research (online)

If after reading the Participant Information Sheet you wish to participate in this project, we ask that you provide your consent as indicated below.

I agree to participate in the Flinders University research project specified above. I have read the Participant Information Sheet, which explains the project to me and which I can print out and keep for my records. I acknowledge that the detail(s) of the project have been explained to me, including the anticipated frequency and length of time for my involvement.

Statement	Consent
I have read the information provided	Agree <input type="checkbox"/>
Details of procedures and any risks have been explained to my satisfaction	Agree <input type="checkbox"/>
I agree to audio recording of my participation in group sessions	Agree <input type="checkbox"/>
I am aware that I can obtain a copy of the Information Sheet and Consent Form for future reference.	Agree <input type="checkbox"/>
I confirm that I am 17 years of age or over	Agree <input type="checkbox"/>

- I may not directly benefit from taking part in this research
- I am free to withdraw from the project at any time and am free to decline to answer particular questions
- While the information gained in this study will be published as explained, I will not be identified, and individual information will remain confidential
- Whether I participate or not, or withdraw after participating, will have no effect on any treatment or service that is being provided to me
- Whether I participate or not, or withdraw after participating, will have no effect on my progress in my course of study, or results gained
- I may ask that the recording be stopped at any time, and that I may withdraw at any time from the session or the research without disadvantage

I understand that if I select 'I agree to the above conditions' button located below I am giving my consent to participate in this research project without the need for my signature.

I agree to all of the above

## Appendix A3

### Invitation to Schools to Participate in the High School Trial

Dear (Name),

I am a provisional psychologist currently completing a PhD in Clinical Psychology at Flinders University in the area of body image and eating disorders.

As you would no doubt be aware, body image is an issue that is particularly relevant to high school aged girls. A recent nationwide survey of young Australians (aged 11-24) indicated that body image was rated as the top personal issue (out of 10), with a third of 15 to 19 year olds indicating it was a major concern. Body concerns can have a range of negative impacts on current and future health and well-being, such as increasing anxiety, depression, and low self-esteem, encouraging unhealthy dieting and other weight control behaviours, and in some cases, leading to clinical eating disorders.

Given these serious impacts, I believe it is important for us to continue to educate and provide strategies for promoting a healthy body image in order to improve well-being and prevent later problems from arising. My PhD research is trialling a new approach aimed at doing just that. Specifically, I am evaluating two programs that take a different approach to improving body concerns:

- The Mindfulness Mode: A program that teaches mindful acceptance and self-compassion with regard to negative experiences and the body, developed by myself and Professor Tracey Wade at Flinders University.
- The Body Project: A program designed to help girls resist pressures to conform to the socially defined “ideal” body and reduce their pursuit of thinness, developed and evaluated in the US by Eric Stice at the University of Texas.

Both of these strategies have shown to be effective, are designed to run over 3 weeks (1 lesson per week), and would be particularly suited for Year 10 to 12 students. The project is being supervised by Professor Tracey Wade here in the School of Psychology at Flinders University, who has extensive experience in supervising school-based programs, and has been granted approval by the Flinders Social and Behavioural Research Ethics Committee.

I am seeking to evaluate these programs in 2012, and therefore I am enquiring whether Roma Secondary College would be interested in taking up the offer of participating in this trial? I would be more than happy to discuss the project in more detail with you at your convenience and answer any questions you may have.

I look forward to hearing from you soon.

Yours sincerely,

Melissa Atkinson

**Appendix A4**

**Principal Consent for Participating Schools**

**SCHOOL CONSENT FORM – CONSENTING TO CLASS PARTICIPATION IN RESEARCH**

**(by experiment)**

I ....., being the Principal/Head of Department of the following school:  
.....

hereby consent to Melissa Atkinson presenting her body image program with nominated classes in my school, and to conduct questionnaire assessment of consenting students as required.

1. I have read the information provided.
2. Details of procedures and any risks have been explained to my satisfaction.
3. I am aware that I should retain a copy of the Information Sheet and Consent Form for future reference.
4. I understand that:
  - Students may not directly benefit from taking part in this research.
  - Students are free to withdraw from the project at any time and are free to decline to answer particular questions.
  - While the information gained in this study will be published as explained, my students and school will not be identified, and individual information will remain confidential.
  - Students may withdraw at any time from the program without disadvantage.

**Name.....Date.....**

**Signature.....Date.....**

I certify that I have explained/provided information about the study to the School Principal and consider that she/he understands what is involved and freely consents to the school’s participation.

**Researcher’s name.....**

**Researcher’s signature.....Date.....**

## **Appendix A5**

### **Information and Consent for Parents and Students**

#### **BODY IMAGE INITIATIVE: INTRODUCTION & INFORMATION**

Dear Parent/Guardian,

This letter is to first introduce Melissa Atkinson who is a PhD student in the School of Psychology at Flinders University. Melissa is undertaking a research evaluation of two class-based programs aimed at improving the way young women feel about themselves and their bodies, under the supervision of Professor Tracey Wade.

Second, I am writing to seek your permission for your daughter to complete a questionnaire on four occasions as part of the evaluation. The data from these questionnaires will inform us whether the lessons have been useful for your daughter. Your daughter will be attending these lessons during normal class time.

#### ***What do the programs involve?***

Your daughter's class will be randomly allocated to participate in either of two 3-week interactive classroom programs or their standard classroom lessons. The two programs are *The Body Project* (aims to increase critical thinking about societal body ideals and how to resist pressures to conform to these) and *The Acceptance Mode* (aims to teach awareness and acceptance of current experiences, with a focus on self-compassion). Both programs are designed to promote a positive and adaptive approach to body image. Each consist of three lessons and will be delivered by Melissa or a trained research assistant, with your daughter's regular teacher present.

#### ***How will my daughter benefit?***

Your daughter will get to participate in lessons that are designed to improve the way young women feel about themselves. If results from the questionnaires show the lessons are valuable, the strategies may become part of the curriculum across various high schools.

#### ***What does the questionnaire ask about?***

The questions relate to issues such as general mood, body satisfaction, eating behaviours and media awareness, and will enable us to assess how valuable the class lessons were. Some questions refer to personal matters (e.g., "How dissatisfied have you been with your weight?"), but all questions are from standardised, international questionnaires meaning they have been used internationally and are deemed to be appropriate for older adolescents. The questionnaire should not take more than 35 minutes of class time to complete. Students will be asked to fill out a questionnaire on four occasions: before the lessons begin; after the 3 lesson program is completed; 1-month later and finally, at 6-months following the program.

#### ***What happens if filling out the questionnaire raises unpleasant feelings for your daughter?***

In the unlikely event that completing the questionnaire should raise any issues for your daughter, there are a number of people available to contact: your daughter's teacher; another appropriate person at your daughter's school (e.g., school counsellor); your daughter's local GP; Kids Help Line (phone 1800 55 1800) or Youth Healthline (1300 13 17 19). Every student who completes a questionnaire will also be given a list of free sources of support should they wish to talk to somebody.

***What happens to the results?***

As will be explained to the students, the information gathered from the questionnaires is kept confidential, and your daughter and her school will not be individually identifiable in any resulting report or article.

***Voluntary Participation - what happens if I say no?***

Your daughter's participation in completing the questionnaire is voluntary. If you do not wish for your daughter to take part they are under no obligation to do so. Your decision will have no impact on your daughter's treatment at school.

***What if I have a question about the study?***

Should you have any questions about the project, either before, during or after the study, you may contact Professor Tracey Wade, using the contact details in this letterhead, or Melissa Atkinson ([melissa.atkinson@flinders.edu.au](mailto:melissa.atkinson@flinders.edu.au)) in the School of Psychology at Flinders University.

Please read the accompanying consent form, sign the tear-off section and return it to your daughter's school as soon as possible.

Thank you for your attention and assistance.

Yours sincerely,



Professor Tracey Wade  
School of Psychology  
Flinders University

*This research project has been approved by the Flinders University Social and Behavioural Research Ethics Committee (Project Number Project Number 4957). For more information regarding ethical approval of the project the Secretary of the Committee can be contacted by telephone on 8201 3116, by fax on 8201 2035 or by email [human.researchethics@flinders.edu.au](mailto:human.researchethics@flinders.edu.au).*

## **BODY IMAGE INITIATIVE: INTRODUCTION & INFORMATION SHEET**

Dear Student,

Your class is being invited to participate in a research project being run by Melissa Atkinson, a PhD candidate in the School of Psychology at Flinders University. The project is aimed at learning more about improving body image in adolescents and involves some classes participating in one of two programs during school time and other classes receiving their usual lessons. All students will be asked to fill out some questionnaires.

### ***What do the programs involve?***

Both of the programs are designed to promote a positive and adaptive approach to body image. Each consists of three interactive lessons and some brief home tasks and will be delivered by Melissa Atkinson or a trained research assistant.

### ***What does the questionnaire ask about?***

The questionnaires ask about everyday experiences such as your mood and feelings, body satisfaction, eating, and media. You will be asked to fill out a questionnaire on 4 occasions, and will each take approximately 30 minutes of class time. After 6 months, we will be comparing the responses of all students to assess how valuable the program lessons were.

### ***What happens if filling out the questionnaire makes me uncomfortable?***

While we expect that participating in this project will be an enjoyable and interesting experience, sometimes people may feel a little uncomfortable answering questions about how they feel about themselves. If participation raises any concerns for you and you would like to discuss these issues with someone, you can contact your local GP, school counsellor, or call the Kids Helpline (1800 55 1800) or Youth Healthline (1300 13 17 19).

### ***What happens to the questionnaire responses?***

The information gathered from the questionnaires is kept confidential and none of the responses you give will be able to be used to identify either you or your school in any resulting report or article. Your participation in completing the questionnaires is voluntary, and you can decide to not participate at any time, or choose to not answer any particular question. Your decision will have no impact on your treatment at school.

If you have any further questions about this project, you are welcome to ask your teacher or school counsellor, or to contact the Supervisor of this project, Professor Tracey Wade, using the contact details in this letterhead.

Thank you for your attention and assistance.

Yours sincerely,



Professor Tracey Wade

**PARENTAL CONSENT FORM FOR CHILD PARTICIPATION IN COMPLETING A  
QUESTIONNAIRE RELATED TO THE BODY IMAGE INITIATIVE**

It is a requirement for research conducted through Flinders University that a parent/guardian gives written consent before any child under 17 can participate. Your permission is sought for your child to complete a questionnaire on four occasions, taking approximately 30 minutes each, so that we can assess the effectiveness of the school-based body image interventions.

If you agree to this and the following points, please complete the tear-off form at the bottom of this page, and have your child return the form to school by **insert date**.

1. I have read the Introduction and Information sheet provided.
2. Details of procedures and any risks have been explained to my satisfaction.
3. I am aware that I should retain a copy of the Introduction and Information sheet for future reference.
4. I understand that:
  - My child may or may not directly benefit from taking part in this research.
  - My child is free to withdraw from completing the questionnaire at any time and is free to decline to answer particular questions, without disadvantage.
  - While the information gained in this study will be published as explained, my child and the school will not be identified, and individual information will remain confidential.
  - Whether my child completes the questionnaire or not, or withdraws after beginning to complete the questionnaire, will have no effect on her progress or treatment at school.

Thank you for your attention and assistance.

**Please complete this consent form and return it to your child's school as soon as possible**

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I \_\_\_\_\_, being over the age of 18 years hereby consent to my child \_\_\_\_\_ completing the questionnaire assessments and for the anonymous results to be used as part of a scientific publication.

**Parent/Guardian Signature** \_\_\_\_\_ **Date** \_\_\_\_/\_\_\_\_/2011

**Adolescent Co-signature** \_\_\_\_\_ **Date** \_\_\_\_/\_\_\_\_/2011

**Appendix B**  
**Research Materials**

## Appendix B1

### Transcript of Video Instructions Used in the Study of Engagement

#### Introduction to Acceptance

I am now going to take you through a technique for responding to unpleasant experience. This technique is about experiencing without judgement and involves simply observing your sensations, thoughts and feelings as they arise, bringing them to your awareness, allowing them to be as they are in the moment, and then letting them go.

The first step is being aware - really aware - of what is going on with you right now. Accepting your experience means first registering the thoughts and feelings that are occurring and allowing them to be there. It is natural for your mind to generate various thoughts – concerns, images, plans, feeling responses, commentary etc. As this happens, just notice and acknowledge it, perhaps by saying ‘ah, there’s thinking’ or ‘there’s feeling’. For example, you may feel worried about something. As you become aware of this you might say ‘ok, there’s worry – that’s how it is right now’. Similarly with physical sensations – become aware of your body, how it feels in the moment. If there is any tension, you can note it ‘ok, that’s how it is right now’, accepting it as your current experience.

As you continue, you may notice that your mind creates evaluative labels for your experiences. For example, you might judge them as being ‘bad’ or ‘wrong’. When this happens, simply note it – ‘ah – there is judging’ – and return your mind to observation – noting your thoughts as thoughts, sensations as sensations, and feelings as feelings: Nothing more, and nothing less. Thoughts and feelings come and go and you are not what they say, they are simply your experience.

As you notice your experience – observing what it looks like in that moment – you can let it go. One way of doing this is to think of your thoughts as if they were projected on the screen at the cinema. You sit, watching the screen, waiting for thoughts or images to arise. When it does you pay attention to it so long as it is there “on the screen” and then let it go as it passes away. So rather than trying to direct your experience by pushing the thoughts away, or shutting them out, just acknowledge them in the moment – ‘ok, that’s how it is right now.’ Then allow them to move on.

Sometimes you may feel discomfort while becoming aware of your thoughts and sensations. You may therefore want to shut these experiences out. However, try to stay with it no matter how bad it seems. Have a good look at it – what does it really feel like, how is it changing as you observe it – and again, allow it to be there. Although it might feel uncomfortable at times, acceptance has been shown to help with these kinds of experiences.

Try to bring a sense of kindness and compassion, a gentle curiosity to your experience. Do not try and hold on to your thoughts and feelings, make them go away, or judge yourself for having them. The idea is to create the space within yourself for unpleasant thoughts and feelings – allowing them to be there – and so welcoming all of your experience as it comes.

**Guided exercise: 3-minutes**

Close your eyes, if that feels comfortable for you.

Now, bring your mind and body into your current awareness. What sensations are you experiencing right now?

[PAUSE]

Pay attention to what is going on for you, noting it, and then letting it go.

[PAUSE]

As thoughts and feelings arise, simply acknowledge them – ‘ok, that is how it is right now’. You can tag them – ‘there is thinking’ – and move on, returning your mind to observation.

**Body Image Application**

After this training, you’ll have the chance to practice this technique and what I’d like you to do is to use it as a way of responding to the advertising images you have just viewed. You may experience negative thoughts or feelings related to your body and the way you look in response to such images – for example, you might have the thought ‘I’m not as attractive as her’ or ‘I’m fat’, or you might notice generally feeling bad or guilty about your body and appearance. Instead of pursuing this line of thinking and feeling, or avoiding them altogether, I’d like you to use the technique I’ve just described. So, try to allow these kinds of thoughts as part your experience, and instead of making judgements about them and what they may or may not mean, recognise that they’re simply thoughts and nothing more. So, as you allow your experience to unfold, if you become aware of a negative or critical appraisal of yourself you can note it – ‘ok, I feel bad – that’s my experience’ and then release it and move on, readying yourself for new experiences.

**Appendix B2**

**Facilitator Guides for Mindfulness-Based Program Used in the RCT with Young  
Adults**

**the mindfulness mode**

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facilitator guide

## SESSION 1

### Session Outline

- Introduce facilitator, program and group
- Present overview of program, group rules, and expectations
- Discuss common coping strategies for uncomfortable thoughts and feelings
- Introduce awareness and acceptance of experience (raisin exercise)
- Engage in experiential acceptance exercise
- Assign home exercises

### Materials Needed

- Workbooks
- White board and marker
- Raisins
- 3-Minute Breathing Space audio recordings

### Introductions, Overview and Expectations (5 minutes)

*Thanks for joining us. All of you decided to take part in this group because of body image concerns – an issue which is very common among girls and women. This program, The Acceptance Mode, is based on research suggesting that when we become better at being aware of and accepting our full experience – both positive and negative – simply for what it is; it can actually reduce the impact of unpleasant and unwanted thoughts and feelings. It is based on the idea that some of our efforts to manage, change, avoid or otherwise control difficult internal experiences such as thoughts, feelings, memories, sensations and urges, can actually make us feel worse, rather than better. Research has already shown this mindful acceptance technique to be effective in lowering body dissatisfaction, as well as depression, anxiety and chronic pain.*

- Make group introductions, give out workbooks

*The main idea in this program is that practising awareness and acceptance will alter the way we the way we view ourselves and relate to our bodies. Some of the goals of this program, listed on **page 1** of the workbooks, are to:*

1. *Identify* thoughts and feelings related to our bodies and the ways we cope with them.
2. Examine the *costs* of efforts to manage distressing feelings.
3. *Practise* awareness and acceptance of uncomfortable thoughts and emotions, both generally and about our bodies.
4. Learn a different way to *relate* to thoughts and feelings about our body.
5. *Develop* a non-judgmental and self-compassionate inner voice related to our body.
6. Increase choice and *flexibility* in responding to thoughts and feelings about our bodies.

*Before we get started, I'd like to ask a few things from you as group members. First, experience suggests that people get the most out of group programs if they participate verbally in sessions, and complete all of the between-session exercises at home so I encourage you to have a go at everything. It is also important that everyone attends all three sessions of this group. If for some reason you need to miss a session, please let me know as soon as possible. We will need to make other arrangements with you before the next regular group session so you will be caught up with everyone else.*

*Also, while we are going through the different parts of this program, some of us will probably reveal some personal details about our lives. This can be difficult when we are not sure if we can trust that others won't repeat what we've said. So I ask that everything said in this group remains completely confidential.*

*Finally, feel free to ask any questions at any point as we go along. Some of the concepts may be difficult to grasp at first and so we need to make sure that it is all making sense for you.*

## **Discussion of Common Coping Strategies (10 minutes)**

Exploring efforts of coping with and controlling experience

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*We are going to start off by exploring some of the internal or private experiences we have that are related to our bodies and the way we view ourselves, and some common strategies we use to manage these. Internal experiences can include thoughts, feelings, urges, sensations, memories etc. What are some that you can think of?*

- Have group members identify thoughts/feelings related to their bodies (write on whiteboard – separate into different categories).
- If struggling, can use sentence starter: *What are the thoughts/feelings/sensations/memories you would most like to get rid of?*

*How have you responded to these kinds of experiences in the past? What kinds of things have you done, and what kinds of thinking have you adopted to deal with unpleasant experiences or make yourself feel better?*

- Have group members identify ways in which they manage/cope with difficult or upsetting thoughts and feelings. (May include strategies such as distraction, zoning out, avoiding, withdrawing, escaping, worrying, dwelling on, imagining, wishful thinking, chastising, blaming, self-talk, analysing, food/alcohol/substances, body checking and body avoidance)
  - *Did it help? Short-term vs Long-term? Has it improved your experience of life?*
  - *Unintentional down-sides? May consider any activities/people/places you have avoided or withdraw from, cost in terms of time, energy, money, health, relationships, quality of life*
  - *Considering both benefit and cost, where does this leave you?*

**Pink Elephant Exercise:** *Please close your eyes. For one minute, try to think of a pink elephant. Imagine what it would look like, what shade of pink it is, whether shocking pink, piglet pink or any*

*other kind of pink; really conjure it up in your mind's eye. Now, for another minute, try very hard NOT to think of a pink elephant. What do you notice?*

**Magnification Exercise:** *This time, for one minute pick a facial pimple (or something similar) and focus on that. Picture what it looks like, and what people might see and think when looking at you. What do you notice?*

- Learning points: A lot of mental effort is involved in suppressing thoughts and feelings (and it doesn't necessarily work). Conversely, when we continuously think about or focus on something, we make it bigger and give it greater importance than it would ordinarily have.

## Acceptance as an Alternative Management Strategy (10 minutes)

Providing an introduction to mindful acceptance and awareness

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*As girls, we tend to do this with our bodies: we focus on our weight and shape, giving it undue attention, and we also try to avoid or get rid of bad feelings about the way we look – often without consciously realising it. Just like in the elephant and pimple exercises though, both of these strategies can make the issue of concern bigger and more central than it should be and can be a contributor to increased distress. This is why many management or coping strategies we use to try to feel better may work in the short-term, but can be costly over the long-term. Also, these coping strategies often take up a lot of effort and take away from other areas of our lives. This program offers mindful acceptance as a different way to relate to our thoughts and feelings so as to not engage in a struggle of judging, fighting or avoiding them. (Can use quicksand or struggle-switch metaphors).*

So, what exactly is mindful acceptance? (refer to page 2 of workbook)

- Mindful Acceptance is:
  - *attending to your experience without the need to evaluate, change, control or hold on to it, reflects the ability to take a mental step back from your own flow of consciousness and therefore create space for a range of possibilities (waterfall or river metaphor)*
  - Some key attitudes for being mindful include:

<b>acceptance</b>	allowing your experience to be as it is and leaving it at that
<b>non-judging</b>	not evaluating your own experience as good, bad, true or otherwise – being an impartial witness
<b>beginner’s mind</b>	being willing to see everything as if for the first time, without already being affected by what you already “know” – pre-existing beliefs and values, being childlike
<b>patience</b>	giving time and space to let things unfold in their own time – not rushing on to the next thing
<b>trust</b>	trusting yourself and your experience – becoming fully you!
<b>non-striving</b>	pursuing no particular goal except to simply note what is happening and experiencing the moment as it unfolds

**letting go**                      trying not to prolong/prevent/deny the experience, learning to release it as it comes and goes

- Mindful Acceptance is not (or more than):
  - *reassurance* (“I’ll get through this”/“this feeling will pass”),
  - *positive thinking or positive self-talk* (channelling positive thoughts, freeing oneself of “negativity”, choosing to look on the “bright side”),
  - *reframing* (adjusting your perspective/“everybody is different and everyone feels differently about themselves”),
  - *resignation/body acceptance* (learning to like your body for what it is/“this is what my body looks like and I need to get used to it”)
  
- Mindful Acceptance will help you to:
  - *become aware of thoughts and feelings you avoid or ruminate on;*
  - *reduce the impact of and reactivity to unpleasant thoughts and emotions;*
  - *improve ability to make adaptive choices about responding to unpleasant experiences instead of reacting automatically;*
  - *learning that you are different to your thoughts and feelings and that they come and go;*
  - *become less judgmental and more compassionate towards self.*

*An important part of acceptance is recognising that a range of thoughts and feelings come with the job description of being a human, and that they don’t have to be viewed as “bad”, “good” or even “true”. Let’s consider why you are here - are there a few of you who would be willing to share why they signed up for this group?*

- Highlight common experience shared by many, negative events always going to be coming and going, part of life as human, society not going to change in foreseeable future

*Our society has developed an obsession with being thin, and it is something that we are faced with everywhere we go. Mindful acceptance is an approach that can help with coping with these kinds of unavoidable experiences and help us towards living a fuller life, embracing all the possibilities.*

*Page 3 has some extra thoughts about Mindful Acceptance. [Read through definitions].*

- *Any thoughts or questions? Anything you’re not sure of or don’t understand? (May want to have group members use their own words to define mindful acceptance)*

## **Experiential Awareness and Acceptance Exercises (30 minutes)**

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### **Raisin Exercise**

- Have raisins ready to hand to each group member and read through the following transcript  
**raisin exercise**

I'm going to go around the class and give you each a few objects. Now, what I would like you to do is focus on one of the objects and just imagine that you have never seen anything like it before. Imagine you have just dropped in from Mars this moment and you have never seen anything like it before in your life (beginner's mind).

*Note. There is at least 10-second pause between phrases, and the instructions are delivered in a matter-of-fact way, at a slow but deliberate pace, asking the class to do the following:*

Taking one of these objects and holding it in the palm of your hand, or between your finger and thumb. (Pause)

Paying attention to seeing it.

Looking at it carefully, as if you had never seen such a thing before.

Turning it over between your fingers.

Examining the highlights where the light shines...the darker hollows and folds.

Letting your eyes explore every part of it, as if you had never seen such a thing before.

And if, while you are doing this, any thoughts come to mind about "what a strange thing we are doing" or "what is the point of this" or "I don't like these," then just noting them as thoughts and bringing your awareness back to the object.

And now smelling the object, taking it and holding it beneath your nose, and with each inbreath, carefully noticing the smell of it.

And now taking another look at it.

And now slowly taking the object to your mouth, maybe noticing how your hand and arm know exactly where to put it, perhaps noticing your mouth watering as it comes up.

And then gently placing the object in the mouth, noticing how it is “received,” without biting it, just exploring the sensations of having it in your mouth.

And when you are ready, very consciously taking a bite into it and noticing the tastes that it releases.

Slowly chewing it, ... noticing the saliva in the mouth, ... the change in consistency of the object.

Then, when you feel ready to swallow, seeing if you can first detect the intention to swallow as it comes up, so that even this is experienced consciously before you actually swallow it.

Finally, seeing if you can follow the sensations of swallowing it, sensing it moving down to your stomach, and also realising that your body is now exactly one raisin heavier.

**Taken from Segal, Williams, and Teasdale (2001)**

- Feedback and Discussion – e.g.:
  - *What comments would anyone like to make about their experiences while eating?*
  - *What did you notice? What kinds of thoughts went through your mind?*
  - *How was this different to your normal experience?*
  - *What would you say the key differences are between paying attention, and behaving automatically?*
  - *How could being “fully present” have an impact on your day-to-day experience?*

*The first part of acceptance is consciously paying attention to the full extent of our experience. We’re not always aware of what we are doing, thinking and feeling – instead, we tend to operate along automatic patterns of thinking and acting. For example, without doing it on purpose you might keep a focus on your body image by continually checking (weighing, looking at reflection, looking down at body), comparing yourself to others (whether real or in the media), or worrying etc. At other times, without specifically intending to, you might also avoid body-related experiences such as avoiding wearing certain clothes, withdrawing from various situations or trying to avoid or get rid of bad or uncomfortable feelings, such as “feeling fat”. It has become so automatic that we don’t even notice when we are doing it. As you might have got a taste during the raisin exercise, practicing awareness and acceptance has the ability to change the nature and quality of our experience.*

*Although we can’t always control what our minds do or where they go, we can make a choice about how we react and what we do, rather than operating on ‘auto-pilot.’ In this way, practicing awareness allows us to step-back from our own minds - simply observe the flow of our thoughts and feelings without attaching anything else to it. We are now going to have a go at practising awareness and acceptance of our breath and body.*

## 10-minute guided mindfulness of breath and body

- Refer to the following transcript

### mindfulness of the breath

Settle into a comfortable sitting position. Allow your back to adopt an upright, comfortable posture. Place your feet flat on the floor, with your legs uncrossed. Take a moment to make sure you feel comfortable and supported. Gently close your eyes.

Begin by bringing your awareness to the physical sensations in your body. Focus on the sensations of touch or pressure where your body makes contact with the chair or floor. Take a moment to explore these sensations. With each breath out, focus your awareness on these sensations and allow yourself to let go of this awareness.

Now bring your awareness to the movement of the breath as it enters and leaves your body. Not trying to control or change the breath in any way, simply drawing it into consciousness, becoming aware of it, and aware of the sensations that come with breathing. As best as you can, you may want to focus your awareness on the nostrils, or you may want to observe the sensations deep down in your belly. Focus your awareness on feeling the sensations in the abdominal wall as it expands gently on the in breath, and falls back gently on the out breath. When you are first learning to draw your awareness to the breath, you may find it useful to gently place your unclasped hands on your abdomen so you can feel it pushing out as you gently inhale, and falling back when you exhale.

As best you can, simply focus on the breath. You are not trying to achieve anything specific or to go anywhere; your intention is to be present in the moment. Be present, here and now. Be totally here in the moment with each breath, simply be here with your breathing. Giving your full attention to each breath, following each breath all the way in, and all the way out. Letting each breath slowly and naturally flow. There is no need to try to control the breathing in any way—simply let the breath breathe itself. As best you can, also bring this attitude of allowing to the rest of your experience. There is nothing to be fixed, no particular state to be achieved. As best you can, simply allow your experience to be your experience, without needing it to be other than it is.

Sooner or later your mind will wander away from the focus on the breath to thoughts, memories, worries, planning, daydreams, drifting along—whatever. This is perfectly OK—it's simply what minds do. It is not a mistake or a failure on your part. When you notice that your awareness is no longer on the breath, don't judge or criticise yourself, gently congratulate yourself—you have come back and are once more aware of your experience! You may want to acknowledge briefly what took you away, and then gently redirect your full, undivided attention and awareness back to the present

moment. Focus on the breath, observing the length of each breath in, the slight pause, and the length of each breath out.

However often you notice that the mind has wandered (and this will quite likely happen over and over and over again), as best you can, note the change and gently redirect your attention back to the breath, back to the sensations as you breathe in and breathe out. Use the breath as an anchor to keep you in the present and to refocus your attention.

We will continue to do this a little bit longer. You may want to continue reminding yourself from time to time that the intention is simply to be aware of your experience in each moment. As best you can, bring a quality of kindness to your awareness, perhaps seeing the repeated wanderings of the mind as opportunities to bring patience and gentle curiosity to your experience.

Adapted from Segal, Williams, and Teasdale (2002).

- Feedback and debrief:
  - *What did you notice/observe/learn/find hard?*
  - *What are you thinking/feeling now?*
  - *Does anyone have another other comments or concerns?*
  - Recognise mindful acceptance as a **process** and stress the importance of **practice**
- Refer group members to Session One Summary (pg 4) – highlight key points and encourage them to read the whole summary at home.
  - Can tend to operate in auto-pilot and fall into old traps unawares
  - Practicing awareness gives us more flexible ways of responding by the process of acknowledge and release
- Reiterate that acceptance requires a commitment to practise!
  - *Practicing acceptance means making the choice over and over and over – even within the space of a few minutes.*

## **Home Exercises (5 minutes)**

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- Explain the following exercises to be completed before next session. Answer any questions or concerns group members may have.

### **Management Strategies**

- Using the sheet provided, write down the strategies you personally adopt to manage distressing feelings and body-image concerns and list all of the unintentional down-sides of these approaches – both short-term and long-term.

### **The 3-Minute Breathing Space**

- Referring to the instructions provided, practise three times a day at set times that you decide in advance. Record each time and your observations on the Record Form.
- Feel free to use the audio recording provided to get you going.

### **Awareness and Acceptance of Routine Task**

- Choose one routine activity in your life and make a deliberate effort to bring moment-to-moment awareness to that activity each time you do it, just as we did in the raisin exercise. Possibilities include brushing your teeth, eating a meal, showering, getting dressed, driving to work/uni, washing the dishes etc. Simply zero in on knowing what you are doing as you are actually doing it. Note your observations on the sheet provided.

## SESSION 2

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### Session Outline

- Review home exercises and discuss barriers
- Discuss thoughts and feelings as passing phenomena
- Practise detaching/decentring from thoughts and feelings (magazine pictures)
- Engage in acceptance attitude role-play exercise
- Practise acceptance with specific negative body-related experience
- Assign home exercises

### Materials Needed

- ‘Helpful hints’ phrase cards
- 10-20 magazine pictures

### Review Home Exercises and Dealing with Barriers (15 minutes)

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- Have each group member share one or two cons from their homework
- Discuss group members’ experience of Acceptance practise (both 3-minute breathing space and routine task) and share any difficulties they found
- Address barriers. Examples:
  - *Mind wandering, habits of mind*
    - That’s what minds do! Rather than getting lost in them, see them as streams of thinking that pass you by - acknowledge the mind has wandered, note where it went, and then bring your attention back to your breath/body
  - *Not sure if doing it right*
    - there is no “right” way..., note the worry and come back to your breath and central observation
  - *Bored/irritated*
    - Respond to this also with mindful approach – curious and accepting, no judging or problem-solving
  - *Couldn’t find the time*
    - Stress practice is the only way! Not making the effort to commit will mean they don’t realise the benefits from the program. Bring enquiring mind to the problem.
  - *Didn’t work/didn’t do anything/nothing changed*
    - Release the idea of “goals” – emphasis is on awareness rather than trying to achieve something
  - *It’s not okay, I can’t accept it*
    - Acceptance does not give thoughts/feelings any truth, just accepting you’re having it as an experience.
  - *Strong emotions/Uncomfortable/painful*
    - Instead of thinking about the discomfort/pain (why? etc), acknowledge that it is there and allow it to move on
- Refer group to ‘Dealing with Barriers’ sheet in workbook (pg 13). Briefly cover the main points and encourage them to read the rest in their own time.

- Big barrier is our automatic tendency to judge and make expectations about what we are doing. Tips:
  - Just keep doing it!
  - Continually bring the mind back to present moment (breath and body)
  - Let go of expectations of success/failure/relaxation, and goals
- Hand out ‘helpful hints’ cards – can be used while practicing or for review.

## **We are not our Experience (15 minutes)**

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*Today we will further explore the idea of mindful acceptance as a new way of relating to our thoughts and feelings.*

**De-centring Exercise:** *Bring to mind an upsetting and recurring negative self-judgement that takes the form ‘I am X’. E.g., ‘I am fat’ or ‘I am not pretty enough’. Hold that thought in your mind for several seconds, and notice how it affects you. Now take the thought ‘I am X’ and insert this phrase in front of it: ‘I’m having the thought that...’ Now run that thought again, this time with the new phrase. What did you notice?*

- Usually some kind of distancing and less impact is noticed. Point is that there was no attempt to get rid of or change the thought itself, simply changing the way we RELATE to the thought.

*Much of the struggle that we experience is actually not because of the thoughts and feelings themselves, but because of the way we interpret them and how we react to them with secondary thoughts, emotions and behaviours. For instance, you might see a pretty, thin girl walking by and think “I wish I was that thin”. You might interpret this as a failing on your part, leading to other negative thoughts about your body, might make you feel bad or start to worry, you might feel ashamed or guilty etc, tighten up on your diet...and the vicious cycle continues. However, if that initial thought could be viewed as simply a thought and then released, you can see how it might nip that cycle in the bud. Part of mindful acceptance is learning that we are not our thoughts and feelings, that they are not necessarily true or factual, they are just mental events that come and go and don’t have any meaning or truth until we give it to them. Practicing simple observation of where the mind wanders will show you that it is ever-changing, coming and going, with passing thoughts, emotions, words, pictures etc. This is done by taking a step back and simply noting that you are having the experience – recognising the thoughts and feelings simply as thoughts and feelings – and then letting them pass on by. Once you’ve stepped back from the content of a thought, you then have a choice about what to do with it.*

**Experiential Exercise:** *I’d like each of you to select one of these magazine pictures. This exercise will give you an opportunity to sit with the experience of viewing the image, making room for any uncomfortable thoughts, feelings and urges that arise. [Have group members choose a photograph]. Take a step back and simply observe the thoughts and feelings that go through your mind, noting your thoughts as thoughts, sensations as sensations, and feelings as feelings: Nothing more, and nothing less. Make a note of what your mind is offering, for example, it might be “I’m thinking that I wish I looked like that”, “there’s disgust” or “I’m having the thought that I’m not thin enough,” without evaluating or engaging in them. One way of doing this is to think of your thoughts as if they were projected on the screen at the cinema. You sit, watching the screen, waiting for thoughts or images to arise. When it does you pay attention to it so long as it is there “on the screen” and then let it go as it passes away. So rather than trying to direct your experience by pushing the thoughts away, or shutting them out, just acknowledge them in the moment – ‘ok, that’s how it is right now.’ Then allow them to move on. Remember that you are not your thoughts or feelings, they are simply mental events that you are experiencing. (Allow a few minutes for reflection).*

- Feedback and Debrief:
  - What did you notice about your experience?

- *How hard was it to not pursue automatic lines of thinking? (can mention the “tape in the mind”)*
- *How did the intensity of your feelings change over time? How could relating to thoughts like that affect your subsequent feelings and behaviours?*
- *Discuss ability to make a choice in responding rather than automatically react*

*The aim of acceptance is not to “feel good” or to get rid of the “bad stuff”, but to help you to reduce the impact or influence of unhelpful kinds of thoughts and beliefs. You don’t have to like them or want them – acceptance does not mean that you have to learn to enjoy it, just allow them to be there because it is part of your experience. Then let them flow on by without needing to analyse it any further.*

### **Role-play Acceptance Attitude (10 minutes)**

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- Have each group member identify a self-directed negative body-related comment or phrase from their own experience. Group leader should direct to group member and have them give an acceptance-styled response.

*We are now going to do a role-playing exercise. I am going to say to you your own negative body-related judgements and I would like you to respond to me using anything that you have learned so far in the program.*

- **Role-play debriefing:**
  - *How did you find it? How did you view your thoughts/feelings?*
  - *What is different/changed from how you would normally react?*
  - *How could responding in this way have an impact on following thoughts, feelings and behaviours?*

### **Acceptance of Unpleasant Body-related Experience (15 minutes)**

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*We are now going to practise mindful acceptance with an unpleasant body-related experience. Remember the concepts of acknowledging the thoughts and feelings that might arise, creating space for them to be there, noticing and observing what is present while it is present and then allowing it to move on. The goal is not to make yourself “feel better” but to note your experience as you become aware of it more fully in the present moment. As we begin, I’d like you to recall a recent situation when you felt distressed about your body. (Read through following transcript ).*

#### **guided acceptance of unpleasant body-related experience**

Okay, settling into a comfortable position. Noticing the way you are sitting in the chair...

Noticing where your body is touching the chair...

Now beginning to bring your attention to your breath...

Noticing how the air enters your body, where it travels, and how it leaves your body...

Noticing the parts of your body that move as you are breathing...

Feeling the sensations in your abdomen with each breath in and out...

Continuing to deepen and slow your breath...

Paying attention to the sensations you experience...

Just letting go and becoming present in the moment...

Now, allowing the focus of your awareness to shift from the breath to this troubling situation related to your body. As best you can, trying to directly observe the qualities of your sensations, thoughts or emotions as they arise.

Drawing their patterns, intensities, and duration, into your awareness.

Maintaining this as your focus, rather than any meanings or implications behind them.

Allowing yourself to take some time to tune into any physical sensations in the body that the difficulty evokes.

Seeing if you are able to notice and approach any sensations that are arising in your body, becoming mindful of those physical sensations, deliberately but gently directing your focus of attention to the region of the body where the sensations are the strongest - in the gesture of an embrace, a welcoming. This gesture might include breathing into that part of the body on the in-breath and breathing out from that region on the out-breath, exploring the sensations, watching their intensity shift up and down from one moment to the next.

When you feel ready, bringing awareness to the thoughts that arise in your mind. Observing when they arise, how they develop, and how they subside.

Focusing your awareness on them as they pass through your mind and eventually disappear. Not searching for specific thoughts. Not forcing them. Not needing to try and make thoughts come or go.

Just being in the moment and being aware of the thoughts that arise naturally.

Being aware of them arising, developing and gradually subsiding. Remembering it may be helpful to bring awareness to your thoughts in the same way that you might if your thoughts were projected onto a cinema screen. Sit, watching the screen, and wait for a thought or image to arise. When the thought arises, you pay attention to it so long as it is there "on the screen", and as it disappears from view, just letting it go.

And now gently opening your eyes.

- Feedback and Discussion
  - *What did you notice?*
  - *What impact did using a mindful acceptance approach have on the way you think/feel about your body?*

- If time allows, can cover Bubble or Scientist/Microscope metaphors as extra analogies of using mindful acceptance
- Refer group members to Session Two Summary (pg 14) – highlight key points and encourage them to read the whole summary at home.
  - Awareness and acceptance allows for distance and perspective, creating greater sense of clarity and control

### **Home Exercises (5 minutes)**

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- Explain the following exercises to be completed before next session. Answer any questions or concerns group members may have.

#### **3-Minute Breathing Space – Scheduled (3 times a day) and Coping:**

- Continue to practise at 3 scheduled times a day. Also, practise whenever you notice unpleasant private events (e.g. thoughts, feelings, sensations, urges). Record each time you do so using the sheet provided.
- It may not be necessary or appropriate to participate in “formal” 3-minute exercises, however, the important point is to step out of automatic pilot by momentarily bringing awareness to mind and body, allowing the experience, and thereby increase the options for relating to it.

#### **Awareness and Acceptance of Pleasant Body-related Experience (one entry per day)**

- Use this as an opportunity to become aware of the range of thoughts, feelings, and body sensations for one pleasant body experience each day, at the time that it is occurring. Focus your attention of what you are doing and keep yourself present in the moment you are doing it. Notice and record as soon as you can, in detail (e.g. put the actual words or images in which thoughts came, and the precise nature and location of emotions and bodily sensations)
- Such experiences may include exploring activities where your body does something useful, or just giving it a treat! Examples:
  - walking, gardening, playing a sport, enjoying your favourite food, climbing stairs, singing or playing an instrument, giving yourself a facial, massage, yoga/pilates, applying body lotion, muscle relaxation, dancing, spa or bath, lying in soft grass or sand, manicure/pedicure, ...

#### **Read “The Guest House” poem**

- Read through at least twice
- Write down your thoughts and feelings as a response and any other comments you might have

## SESSION 3

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### Session Outline

- Review home exercises
- Discuss self-compassion and letting go
- Practise compassion and acceptance with negative body-related scenario
- Discuss future pressures and personalise action plan
- Assign home exercises

### Materials Needed

- Whiteboard and marker

### Review Home Exercises (10 minutes)

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- Discuss the use of acceptance as coping – have each member share at least one experience where they used it and what they observed
- Have each group member share one positive body-related experience and what they noted about it as they became aware and accepting of their experience
  - Learning Point: *When we're on auto-pilot we tend to ignore or dismiss the positive aspects of our body and therefore only focus on the negatives. Learning to become aware of those moments when our body does something we like, or helps us achieve something, or just makes us feel good, ensures that we are experiencing the full range of thoughts and emotions, bringing a balance to the way we approach our bodies.*

### Practising Self-Compassion and Letting Go (25 minutes)

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- Discuss comments from reading *The Guest House*
  - *Is an honourable attitude towards negative experience possible?*
  - *Can we cultivate a friendly/curious attitude to all experience, including those most distressing and feared?*
  - *What could this “welcoming” look like?*
  - *What impact could this kind of attitude have on your day-to-day experience?*
  - Learning Point: *The art of mindful acceptance is to encourage the welcoming of all experience with kindness, curiosity and understanding – in this, even distress can be “invited in” to sit next to you.*
- Cultivating a sense of compassion and kindness towards your own experience is an important part of practising acceptance. Some people, for various reasons, only see judgment and negativity and criticism, not making equal amounts of room in their guest house for compassion and kindness.

**Exercise:** *Sometimes it's easier to see the effects of criticism and judgement when a picture is painted for us. I'd like to read to you a scenario. (Read through the following scenario).*

### which coach would you choose?

Imagine that as a parent you took your child along to coaching sessions to teach them to play basketball. It has always been your child's dream to play basketball well, and so they are really excited and determined to try hard in the lessons. Now imagine that your child has lessons under two different coaches: Coach Smith and Coach Jones. Coach Smith does not say anything any time your child bounces and throws the ball. However, when your child drops the ball or misses a catch, Coach Smith berates them, telling them what a terrible job they are doing, that they are getting it all wrong, and says that they need to try harder because they are just not getting it right. He may also call your child names, such as a 'wimp' and 'pathetic'. In comparison, Coach Jones does not tell off your child every time they drop the ball but rather encourages the child and says they are doing well when they catch the ball. When your child drops the ball, Coach Jones says things like: 'That doesn't matter, you are only learning; as you keep practising you will get better,' and 'It is OK to make mistakes because it helps us to learn how to do it better.'

- *Now, when it comes to choosing which coach you want to go on teaching your child, which coach would you choose? Why is that? Importantly, which coach do you think would get a better performance out of your child – Coach Smith or Coach Jones?*
- **Learning Point:** Making continual judgments and self-criticisms is like Coach Smith: an internal critic or bully - a voice in your head pointing out faults, calling you names. Instead, mindful acceptance teaches a compassionate way of responding to self – one that doesn't make judgements about good or bad, right or wrong.

#### Cons of Evaluation Exercise:

- *I'd like us to list some of the cons of self-criticism/judgement/evaluation. What effect does it have on how you feel about yourself, on what you can and cannot do? (List responses using a whiteboard).*
- *Now, let's brainstorm suggestions for what a compassionate acceptance approach could say or do. (If they are struggling to generate ideas, ask them to imagine what they would say to a friend if they expressed negative or critical body comments about themselves using what they now know about acceptance).*

**Guided Acceptance of Body-related Scenario:** *We are going to have another go at using mindful acceptance with a visualised scenario, practising this compassionate approach we've been talking about. Aim to be welcoming, showing kindness and curiosity towards your experience, observing the thoughts and feelings and simply noting any judgements or evaluations, e.g., "there's self-criticism". Then allow them to move on and directing your attention back to the visualisation. (Read through following transcript).*

### guided acceptance of body-related scenario

Okay, settling into a comfortable position. Noticing the way you are sitting in the chair...

Noticing your breathing in and out...

Paying attention to the sensations you are experiencing...

Just letting go and becoming present in the moment...

Now, shifting the focus of your awareness to thinking of a situation that would normally cause uncomfortable feelings or distress about your body (it might be going to the beach, dressing to go out, eating in public, whatever).

Really visualise yourself in that setting.

Now becoming aware, really aware, of what is going on with you right now.

Drawing awareness to the thoughts going through your mind. Just noticing the thoughts. Not dwelling on them, or trying to change them, just noticing them: what do they look like, how they develop, and how they subside.

Welcome whatever arises, maybe labelling it – “there’s critical thinking”.

And now re-focusing your awareness to your feelings. Noticing the feelings you are experiencing at the moment.

Bringing extra awareness to any sensations of discomfort or any unpleasant feelings. Not shutting them out or pushing them away, just acknowledging them: That’s just how it is right now.

Drawing your awareness now to the sensations in your body. What sensations are present: tingling, warmth, tension. Again, not trying to control or change them, just noticing them. Acknowledging, that’s how it is right now.

As you are drawing these things into your conscious awareness, you have a full appreciation of what is happening for you at this moment. Noticing the critical thoughts and unpleasant feelings, perhaps also noticing kinder thoughts and a sense of allowing. You are thinking mindfully, not just functioning with automatic thoughts, feelings and sensations.

Seeing if you can bring to this attention an even deeper attitude of compassion and openness to whatever sensations, thoughts, or emotions you are experiencing, however unpleasant, by saying to yourself from time to time: It’s okay. Whatever it is, it’s already here. Let me open to it.’ Then just staying with the awareness of these internal events, breathing with them, accepting them, letting them be, allowing them to be just as they are. They are simply part of your experience, and can be welcomed to have a place and exist as they are. It may be helpful to repeat, ‘It’s here right now. Whatever it is, it’s already here. Let me be open to it. Softening and opening to the sensations and thoughts you become aware of, letting go of any tensing and bracing.

Remembering that by saying 'It's already here' or 'It's okay,' you are not judging the original situation or saying that everything's fine, but simply helping your awareness, right now, to remain open to the sensations of mind and body.

And now gently opening your eyes.

- **Feedback and debrief**
  - *How did you find this visualisation?*
  - *Are you noticing any differences now from the first week?*
  - *What impact could a welcoming and compassionate attitude towards your self have on your day-to-day experience?*
  - Learning Point: Refraining from judging/evaluating prevents secondary emotions (e.g., guilt, shame) and leads to more freedom in action response

### **Preparing for the Future (10 minutes)**

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*We have spent some time talking about and walking through past and current body image concerns. However, it is important to be prepared to deal with upcoming challenges as well.*

- *What are some future pressures to be thin that might come up in your lives? (e.g. fitting into a bridesmaid/wedding dress, summer holidays, pregnancy, getting older/slower metabolism)*
- *How might you respond to future pressures using mindful acceptance?*

### **Develop Personal Action Plan**

- *Using the Body Action Plan in your workbooks (pg 23), identify some of the warning signs that you might be struggling with your body, and list some ways that you can cope with them using what you have learned in these sessions.*
- Refer group members to Session Three Summary (pg 24) – highlight key points and encourage them to read the whole summary at home.
  - Criticism and judgement cuts out half of our range of experience
  - Learning to use an acceptance and compassionate voice brings balance

### **Home Exercises (5 minutes)**

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#### **3-Minute Breathing Space**

- Continue practising mindful acceptance for a range of experiences and in particular, for coping with unpleasant body-related thoughts and feelings (using the 3-minute breathing space) – record form to be emailed

#### **Self-Compassionate Acceptance statements**

- Based on the ideas that we generated in the session today, write down your top 5 ‘compassionate acceptance voice’ statements that could be used when you notice yourself making judgements or evaluations about your experiences (to be emailed).

### **Mirror Exercise - CLOTHED**

- Please stand in front of a full-length mirror and view yourself. Practise an attitude of acceptance as you do this, noting the thoughts, emotions, and sensations that arise without trying to change or chase them away. Write down your comments on the form provided (to be emailed).

### **Wrap-Up (10 minutes)**

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*Well, as you are aware, this is the final session. I'd like to ask you what you feel you have gained from this program? Have you noticed anything different about how you feel about your body?*

- Review any positive changes

*I want to thank each of you for signing up for this program. I have enjoyed your participation in the group exercises and discussions. I hope that you feel it was worthwhile and that this experience helps you feel better about your body image now and far into the future, as well as being a tool for dealing with all of life's ups and downs. Please feel free to contact me if you have any setbacks or lingering concerns. Thanks again for your participation.*

**Appendix B3**

**Facilitator Guides for Dissonance-Based Program Used in the RCT with Young  
Adults**

**the body project**

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facilitator guide

## SESSION 1

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### Session Outline

- Make introductions
- Present conceptual rationale for intervention, group rules, and expectations
- Provide a definition of the thin ideal
- Discuss costs associated with the thin ideal
- Assign home exercises

### Materials Needed

- Facilitator Fact sheet
- Pictures of models from fashion magazines (cut out 10-20 and place in plastic sleeves)
- Picture portfolio of “perfect woman” through history

### Overview

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The focus of session 1 is on providing a conceptual rationale and overview of the program, introducing participants to each other, and orienting participants to the rules and expectations of the group. This initial session is largely interactive, with participant-led discussions of the definition and origins of the thin ideal, and costs associated with pursuing the thin ideal. The group leader should stress the importance of attendance and completing the home exercises. The general goal of this session is for participants to begin to critically evaluate the thin ideal and to begin inducing dissonance by having them make public counter-attitudinal statements.

### Introduction, Overview and Voluntary Commitment (7 minutes)

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*Thanks for joining us. All of you decided to take part in these groups because of your body image concerns – an issue very common among girls and women. This program is based on studies that found when women talk about the “thin ideal” and how to challenge pressures to be thin, it makes them feel better about their bodies. It is based on the idea that understanding the cultural pressures that influence women’s body images and learning how to respond to these pressures improves body satisfaction. Research has shown that this is one of the best programs for improving body satisfaction, and it also lowers the rates of eating problems and depression.*

- Make introductions (ice-breaker)

*The main idea in this class is that discussing the social pressures behind body dissatisfaction and how to respond to them will improve your body satisfaction.*

Give verbal outline of Program:

1. *Define* the thin-ideal and explore its origin.
2. Examine the *costs* of pursuing this ideal.
3. Explore ways to *resist* pressures to be thin.
4. Discuss how to *challenge* our personal body-related concerns.
5. Learn new ways to *talk more positively* about our bodies, and
6. Talk about how we can best respond to *future* pressures to be thin.

*Experience suggests that people get the most out of these groups if they attend all meetings, participate verbally, and complete all of the between-meeting exercises. Are you willing to do this?*

*While we are going through the different parts of this class, some of us will probably reveal some personal details about our lives. This can be difficult when we are not sure if we can trust that others won't repeat what we've said. So we ask that everything said in our group remains completely confidential. Can everyone agree to this?*

It is also important that everyone attends all three sessions of this group. If for some reason you need to miss a session, please let me know as soon as possible. We will need to schedule a make-up session with you before the next regular group session so you will be caught up with everyone else.

## **Definition and Origin of the Thin Ideal (15 minutes)**

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- Spread out magazine pictures
- Direct each group member to pick one that appeals to them in some way
  - Ask each to tell you what they notice about the picture and what it says about society's view of women
- Facilitated discussion:
  - It is important to promote participation and collaboration – let the participants do the talking (increases chance of dissonance). Take a stance of interested curiosity.

*What are we told the "perfect woman" looks like?*

Focus the discussion on the thin and unrealistic parts of the thin-ideal. Note incompatible feature (e.g., ultraslenderness coupled with large breasts). Make an effort to be culturally sensitive – can explore how dominant culture/subculture influences perception of beauty ideals.

Write these on whiteboard, explain that these qualities represent the thin-ideal, which will be the main focus of ensuing discussions. This will help everyone to have a shared understanding and visual representation of the thin-ideal.

*Has this thin ideal always been the ideal for feminine attractiveness? Has there ever been a time in history when the “perfect woman” looked different?*

Solicit examples of different beauty standards over time (e.g., Marilyn Munroe, women of Renaissance period, Twiggy, Supermodels of today).

*Where did this ideal come from? What are the origins of the thin ideal in our current society?*

E.g., media, fashion industry, diet/weight loss industry.

Key: not internally generated, rather is promoted by industries that have a vested interest in the way we perceive our bodies.

*How is the thin ideal promoted to us?*

E.g., TV, magazines, music videos. May also include peers, family members.

*How do thin-ideal messages from your family, friends, and dating partners affect how you feel emotionally?*

Discuss with each group member and relate it to her personal experiences in this area, and the impact on her feelings and self-worth.

*How do thin-ideal messages from the media impact the way you feel about your body? What are your thoughts and feelings about your own body when you look at a magazine picture of the thin ideal?*

E.g., feeling inadequate because I don't look like a model, dislike of my own body, makes me depressed.

*What does our culture tell us will happen if we are able to look like the thin ideal?*

E.g., accepted, loved, happy, successful, and wealthy.

*Do you really think these good things happen if you get thinner?*

Discuss the fact that becoming thinner will likely have little impact on their lives in terms of these perceived benefits.

Be sure to differentiate the thin ideal from the healthy ideal (striving for an unrealistic look by whatever means necessary versus avoiding obesity and resulting health consequences). Be careful not to convey that trying to be healthy is bad. **HOWEVER**, do not describe benefits of thinness in general or indicate that the two ideals are close. Always re-direct the conversation back to the costs of pursuing the thin-ideal. E.g., “although there are clearly medical problems associated with obesity, the goal of the present session is to discuss the costs of pursuing the ultraslender ideal promoted by our culture.”

## **Costs Associated with Pursuing the Thin Ideal (20 minutes)**

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- Discuss the costs involved with the thin ideal
- Facilitated discussion:  
*For the individual person, what are the costs of trying to look like the thin ideal?*

E.g., decreased self-worth, financial expense, physical and mental exhaustion, adverse physical effects due to extreme dieting/exercise.

Allow time for participants to think about these questions – pause and wait rather than suggesting responses.

*How does the thin ideal negatively affect people's health?*

E.g., encourages unhealthy weight management techniques, can cause depression and anxiety.

*What are the costs for society?*

E.g., increased mental health care costs, promotes a culture of discontent.

*Who benefits from the thin ideal?*

E.g., media, the fashion industry, diet/weight-loss industry.

*Are you one of the people who benefit from the thin ideal? For example, are you a media executive, a supermodel, the founder of a diet programme?*

*Given all these costs, does it make sense to try and look like the thin ideal?*

*Why would you NOT want to pursue the thin-ideal?*

Ensure that each participant makes a public statement against the thin ideal at this stage (and anywhere else possible). However, don't engage in a battle of wills – rely on group members to challenge each other.

## Home Exercises (3 minutes)

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### Letter to Adolescent Girl

- Write a letter to an adolescent girl who is struggling with body image concerns about the costs associated with pursuing the thin ideal

### Self-Affirmation Mirror Task

- *We would like to ask you to stand clothed in front of a mirror and look at yourself and write down all your positive qualities. This includes physical, emotional, intellectual, and social qualities. For instance, you may like the shape of your arms, the strength of your legs, your hair, the sound of your laugh, or the fact that you are a good friend. We know it can be hard, but please make sure to include at least some physical attributes on your list. It may be difficult at first and may seem silly, but we really want you to do this because it is important to recognise each of these areas about yourself. Past participants have found this exercise to be very helpful and empowering. So give it a shot, and please bring your list of positive qualities to group next week.*

## Facilitator Fact Sheet

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- A. Fashion magazines (according to a former fashion magazine editor and the International Conference on Eating Disorders)
- a. Function of a fashion magazine: To convince women that something is wrong with them (e.g., hair, body, sex life) so that advertisers can sell their products to fix the perceived problem. The more anxious they make you, the more likely you will buy the magazine and the larger their readership, which increases advertising sales.
    - i. How they convince you something is wrong
      - Lead articles: A Pulitzer Prize-winning article on eating disorders or ovarian cancer is not going to increase advertising sales, but an articles with a title like “You never knew what your butt looked like from the rear! Strategies for a better behind” will.
      - Idealised images: Photographs are digitally enhanced, models have make up professionally applied, clothes are pinned, and so on.
    - ii. At this editor’s magazine, many of the key staff had eating disorders due to a culture of disordered eating and weight/shape attitudes.
      - They couldn’t bring food into the office because it was too upsetting for some staff.
      - One woman brought a scale to work and moved the scale around the bathroom floor until she got an acceptable weight.
- B. Advertising strategies
- a. Physical tactics
    - i. Bras are stuff with pads to fill out the front of a dress that is too loose.
    - ii. Padded underwear is also used to fill out the back of a dress.
    - iii. Duct tape is often used to tape breasts together to create cleavage.
    - iv. Girdles are used to squeeze the models into a dress sample size that is too small.
    - v. Excess flesh is duct-taped in the back for a front-angle photograph depicting a taught, streamlined, wrinkle-free body. Models can be taped from the front for a rear of side-angled photograph showing tight, firm hips, bottoms, legs and arms.
    - vi. Heavy clamps are used to cinch clothing in and weight it down to create an illusion of the perfect fit.
    - vii. Often, body doubles are used in films, TV commercials, and magazine advertising.
  - b. Computer tactics
    - i. Once a photo shoot is complete, images are altered even further through a process called reimagining. By scanning the photograph into a computer, the image can be altered in thousands of ways. Almost every magazine uses computer reimagining in some way:
      - Complexion is cleaned up, eye lines are softened, chins, thighs, and stomachs are trimmed, and neck lines are removed.
      - Some of the pictures of the models in magazine do not really exist. The pictures are computer-modified compilations of different body parts.
      - The television news show 20/20 aired a story of a photo shoot of supermodel Cindy Crawford. Two hours were spent digitally editing and airbrushing her face and body.
- C. Fashion models versus average woman

- a. The average American woman is 5'4" (163cm) tall and weighs 140 pounds (64kg). The average American model is 5'11" (180cm) and weighs 117 pounds (53 kg).
    - i. The average American woman wears a size 12-14 (14-16 AU).
    - ii. Marilyn Munroe, the Hollywood goddess, wore a size 12 (14 AU).
  - b. Most fashion models are thinner than 98% of American women (Smolak, 1996)
    - i. Twenty years ago, models weighed 8% less than the average woman. Today they weigh 23% less, and many fall into an anorexic weight range.
    - ii. Kate Moss is 5'7" (170cm) and weighs 95 pounds (43kg). That is 30% below ideal body weight. Supermodels Niki Taylor and Elle Macpherson also meet the body mass index criteria for anorexia.
  - c. Only 5% of women have the body type (tall, genetically thin, broad-shouldered, narrow-hipped, long-legged and usually small-breasted) seen in almost all advertising. (When the models have large breasts, they've almost always had breast implants.)
- D. Dieting, exercise, and self-image
- a. Americans spend more than \$40 billion on dieting and diet-related products each year (Smolak, 1996).
    - i. A study of mass media magazines discovered that women's magazines had 10.5 times more advertisements and articles promoting weight loss than men's magazines did (Guillen & Barr, 1994).
    - ii. Ninety-five percent of enrollees in weight loss programs are women, even though the sexes are overweight in equal proportions.
    - iii. Women who have a history of chronic yo-yo dieting can decrease their overall lifespan of up to 20%.
  - b. In 1995, before television was first introduced to Fiji, there were no cases of eating disorders. Sixty-five adolescent school girls were followed over 3 years:
    - i. After the introduction of British and American television, 12.7% of the girls had developed severe eating disorder symptoms after 1 month and 29.2% after 3 years.
    - ii. Self-induced vomiting as a weight control mechanism went from 0% in 1995 to 11.3% by 1998.
  - c. Celebrities work out from 90 minutes to up to 6-7 hours per day.
    - i. P.Diddy has a personal trainer that he pays \$500,000 a year (VH-1).
    - ii. Usher does 1000 crunches per day plus daily "forty minutes funk" (stretching and cardio) and strength training.
    - iii. Hilary Swank, in preparing for Million Dollar Baby, exercised 4.5 hours per day, six days per week (from Oprah online).
  - d. A study in 1995 found that after just 3 minutes spent looking at models in a fashion magazine, 70% of women reported feeling depressed, guilty, and ashamed of their bodies.
  - e. A 1996 study found that the amount of time an adolescent watches soap operas, movies, and music videos, is associated with their degree of body dissatisfaction and desire to be thin (Tiggemann & Pickering, 1996).
  - f. If shop mannequins were real women, they would be too thin to menstruate and bear children.
    - i. Rintala & Mustajoki (1992) reported in the British Medical Journal that store mannequins do not have enough body fat to menstruate. The researchers visited clothing stores, and based on measurements of the mannequins calculated the percentage body fat that a woman the shape of mannequin would carry. In direct contradiction to the slim, healthy, and fertile physique that mannequins seek to portray and inflict on women, the finding of the study was that, overwhelmingly, shop mannequins, if they were people, would be infertile.
    - ii. Clothing on mannequins is pinned, so clothes would never look the same on a real person unless it was pinned exactly perfect.

- g. Women naturally carry fat on their hips and thighs – it is vital for fertility, prevention of osteoporosis, healthy skin, eyes, hair, and teeth.
- h. The National Weight Loss Registry, run by the universities of Pittsburgh and Colorado, tracks those that have achieved significant long-term weight loss and has documented that not one person has been successful by eliminating or severely restricting one of the macronutrients (protein, carbohydrate and fat).
  - i. Long-term weight loss typically associated with low-fat, low calorie maintenance diet along with 1 hour of moderate exercise most days per week.
- i. In the study, “Exposure to the mass media and weight concerns among girls” by Field, Cheung, Wolf, Herzog, Gortmaker, & Colditz (1999), the authors used a cross-sectional survey of 548 girls in fifth grade through twelfth grade to assess influence of the media on weight concerns, weight control behaviours and perceptions of body weight and shape.
  - i. A majority of girls (59%) reported dissatisfaction with their body shape, and 66% expressed the desire to lose weight; the prevalence of overweight in this study was 29%.
  - ii. Girls were asked about their frequency of reading women’s fashion magazines. Some 69% reported that appearance of models in the magazines influenced their image of a perfect female body, and 47% desired to lose weight because of the magazine pictures.

## SESSION 2

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### Session Outline

- Review home exercises from previous session
- Engage in role-playing exercises
- Assign home exercises

### Overview

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The focus of session 2 is on reviewing the topics discussed in the previous session and discussing reactions to the two homework assignments. Then this session moves to role plays to elicit verbal statements against the thin ideal.

*In this session, we will talk more about the costs of pursuing the thin ideal and explore ways that we can resist pressures to be thin.*

### Letter Review (15 minutes)

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- Solicit comments from the group regarding their thoughts about the letter-writing exercise.
  - *Did you find this exercise difficult?*
  - *What were your feelings as you wrote the letter?*
  - *Who is willing to read a part of the letter they wrote?* (Have each participant read aloud several costs she identified, encourage group discussion in personalising to their own lives)
  - *Were there any other costs to pursuing the thin-ideal that you thought of that have not been mentioned?*

### Self-Affirmation Exercise Review (10 minutes)

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- Solicit comments from the group regarding their thoughts about and experiences with the self-affirmation exercise.
  - *How did you feel when you did this exercise?*
  - *Was it challenging? How so?*
  - *Why do we have this culture of shame/humbleness about ourselves? (e.g., media and industry perpetuating thin-ideal)*
  - *What are two aspects of yourself that you are satisfied with, including one physical feature?*

Have each participant share two qualities she listed. Discourage qualified statements, e.g., “I guess my stomach is not too horrible”. If you get these, accept them and ask for an additional statement that is completely positive. It is important to reiterate that this is a safe place (counter concerns about bragging/conceit). If participants reluctant, facilitate discussion of why they find it difficult to talk about what they like about themselves, yet they readily identify flaws. You may have participants contrast the number of times they find fault with their bodies with how many positive statements they make about themselves, and discuss how our culture supports this type of negative self-talk.

- *In the end, did you feel the exercise was useful?...*
- *Hopefully, you recognise the positive things about yourselves and will remember them, particularly as the pressure of the thin ideal surrounds you. Given that these are potent pressures, let's discuss ways to resist them.*

### **Role Plays to Discourage Pursuit of the Thin Ideal (20 minutes)**

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- Group leader takes role of a severe dieter or someone with consuming body-image worries. Let each participant spend approximately 2 minutes attempting to dissuade you from pursuing the thin-ideal. Parrot, or echo, any pro-thin-ideal comments previously made by participants while you are playing the thin-ideal role. Focus on the unrealistic benefits of the thin ideal (“I’ll be happy all the time if I’m thin,” “Everyone will like me,” “I’ll have the perfect partner,” “All my problems will be solved”).

*Now I would like to do some role plays. I will play a person who is obsessed with the thin ideal and your job will be to convince me that I shouldn't be. Feel free to use any of the information brought up in our earlier discussions.*

- If you have time, ask each participant to engage in two role-plays.
- Example statements for leaders:
  - Summer is just around the corner, and so I think I will start skipping breakfasts to take off some extra weight.
  - I am sure that people will accept me and love me if I only lose a little more weight.
  - I just saw an ad for this new weight loss pill (diet/shakes). I’m going to order it right away. I can finally be as thin as I want.
  - I can’t meet you for dinner tonight because I have to go spend a few hours at the gym. I only went for two hours yesterday.
  - I feel a little dizzy lately, which may be from these diet pills I’m on, but I don’t care because I’ve already lost 4 kilograms.
  - Most people have weak will power and give in to hunger. I’ll show people how much self-control I have by not eating anything but grapefruit.
  - To be the best runner, I have to get down to my lightest weight. I am only doing this for my health; this will help me avoid injuries.
  - I have to be thin or my life is ruined.
  - Anyone could have the body of a supermodel if they really wanted it.
  - No guy is ever going to ask me out unless I drop some of this weight.
  -

### **Role Play Debriefing**

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- Promote discussion and reflection of the benefit of challenging the thin-ideal. Let the participants come up with the arguments
  - *How did it feel to do the role-plays?* (Let them reflect on how it felt to argue against someone who is fixated on pursuing the thin ideal)
  - *Do you think it might be beneficial for you to challenge people when they make thin-ideal statements?*
  - *How/why is it helpful to speak out against pressure to conform to the thin ideal?*

## Home Exercises (5 minutes)

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### Verbal Challenges

- *Here are some examples of thin-ideal statements:*
  1. *A boyfriend might say that he thinks the ideal dress size is an 8.*
  2. *Your mum might comment on how another mum has really let herself go because she gained some weight.*
  3. *A friend could say that she wished she looked like a particular supermodel when looking at a fashion magazine.*
- *How could you respond to these comments to show that you disagree with the thin ideal and think these sorts of comments are unhealthy?*
- *In this first home exercise, please come up with at least three examples from your life and how you could have responded verbally to challenges. These examples probably won't be how you actually responded to the pressure. Instead, they should be how you might respond now based on what you know about the thin ideal.*

### Top 10 List

- *The second exercise is to come up with a top-10 list of things girls/women can do to resist the thin-ideal. What can you avoid, say, do, or learn to battle this unhealthy beauty ideal? Please write your top-10 list down and bring it to the next group.*
- Encourage creativity. Examples:
  1. Write letter to fashion magazine editor saying they should include a variety of body sizes in the magazine
  2. Write a letter to a company indicating that you are boycotting their product because they promote the thin ideal in their ads
  3. Stop subscribing to a fashion magazine
  4. Stop wearing in vogue clothing that is meant to show slenderness

## SESSION 3

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### Session Outline

- Review home exercises from previous session
- Engage in role-playing exercises
- Have students share the reasons they were interested in joining the group
- Introduce the Behavioural Exercise
- Introduce concept of “body activism”
- Assign home exercises

### Overview

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The focus of session 3 is on continuing the discussion of how to resist the thin-ideal, how to challenge personal body-related concerns, and how to respond to future pressures to be thin. Role plays are again used so that participants can practice making statements that counter the thin ideal.

### Verbal Challenge Exercise Review (5 minutes)

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- Have each participant share one example from her life of pressures to be thin and the response that the person generated to challenge these thin ideal statements.
- If they cannot come up with any examples, encourage them to think of a time when they felt pressure from themselves to be thin (e.g., after looking in the mirror or comparing themselves to a thin friend and thinking, “I really should lose weight”), and what they could have said to themselves to challenge the thin-ideal thought.
- Help them understand that pressure can often be subtle and can come in different forms.

### Quick Comebacks to Thin-Ideal Statements (15 minutes)

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- The goal of this exercise is to help participants be ready to respond quickly and effectively to pressures to be thin.
- Ask each participant generate two counter thin-ideal statements in response to statements generated by the group leader. Be sure to ask whether participants ever hear statements like this, because it is clinically important to remind them that such harsh statements are frequently uttered. Feel free to use statements generated by the participants themselves.

- Sample statements for leaders:
  - Look at that fatso over there!/OMG, that girl is huge!
  - Amy has really gained weight over the summer break.
  - I am thinking of going on a diet, do you want to join me?
  - Don't you think that girl is a cow?
  - I would never be friends with someone that heavy.
  - My brother says I look too fat, what do you think?
  - Don't you think Jennifer Lopez (Kate Winslet/Jessica Simpson/Beyonce/Christina Hendricks/Nigella Lawson) is a little too heavy?
  - If I don't lose some weight, I may be dropped from the dance/sports group.
  - I hate my body so much – I wish I could just wake up in a different one.
  - You know if you just stopped eating cheese, you would lose enough weight to look attractive.
  - Only skinny girls get asked out by boys.
  - She really doesn't have the body to be wearing that outfit.
- Debriefing:
  - *How did this make you feel?* Encourage group discussion.
  - Participants may respond that it would be hard to generate these in real life. This can lead into a discussion of some of the challenges to resisting pressures, which can help group members explore realistic ways in which they might be able to apply these strategies to situations in their own lives.
  - *What things make it hard to resist the thin-ideal, and how can we deal with them?*

## **Reasons for Signing up for this Program and Behavioural Challenge (10 minutes)**

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*Is anyone willing to share why they signed up for this group? For example, many girls have signed up because of a negative comment somebody made to them, or because of concerns about the shape of their body.*

- Have group talk about the particular things that make each of them feel uncomfortable about their body (e.g., wearing certain clothes, going to specific places)
- Encourage other group members to challenge the thoughts and feelings that specific participants have about specific body parts. If they seem reluctant, group leader may want to acknowledge their own body image concerns that they may have struggled with.

*Listening to you all, it sounds like it would be helpful to some of you to challenge some of your fears and concerns related to your body image.*

- Ask group members to talk about particular things they avoid because it makes them feel uncomfortable. The goal of the following exercise is to encourage participants to recognise self-defeating thoughts/behaviours and to expose them to their feared situations in order to provide corrective feedback (e.g., people do not point and stare at their bodies when they go to the pool in a swimsuit).

*We would like to challenge you to do something in public that you currently do not do because of your body image concerns to increase your confidence – for example, wear certain clothes to uni, go to the beach/pool in a swimsuit, going out dancing, or exercise in public. Can you promise to do this at least once in the next week? We would like each of you to do this challenge and then let us know during the next session how it went. Please take a moment to think of something you would like to do but haven't done yet. Each of you should have a plan before we finish today.*

- The idea is not to simply do something they would not normally do, but to do something they would otherwise do if they did not have body image concerns.
- Have them write down their goals on the Behavioural Challenge form. Assist – ensure appropriate, achievable, and not unhealthy
- *How do you think doing this exercise might help you feel better about your body?*

### **Top-10 List Debriefing (10 minutes)**

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*The second exercise from last session asked you to list 10 things that girls and women could do to resist the thin-ideal – what you can avoid, say, do, or learn to combat this social pressure. This might be referred to as “body activism.”*

- *Can each of you discuss one or two of the ideas you generated?*
- *Are there specific barriers to actually doing these activities?*
- *How can you overcome these barriers?*
- *We would like each of you to do at least one act of body activism and then let us know how it went. Would you be willing to do that?*
- *Please choose one behaviour from your list to do during next week. Can each of you tell us what you are planning on doing?*
- *Please write your body activism goal on the sheet provided to remind yourself of it.*

### **Future Pressures to be Thin (10 minutes)**

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*We have spent a lot of time discussing past and current experiences regarding pressure to be thin. However, it is important to be prepared to deal with upcoming challenges as well. What are some future pressures to be thin that might come up in your lives?*

- e.g. dating, fitting into bridesmaid's/wedding dress, summer holidays, pregnancy, getting older/slower metabolism (“middle-age spread”)
- If struggling, have them think of someone slightly older than they are (e.g., older sister, friend or parent) and think about the pressures they have encountered. What things are likely to trigger pressures?

- *How do you plan on responding to these pressures? It may seem strange to be talking about this now, but it is often easier to come up with responses ahead of time so you are prepared to deal with these pressures when they happen.*
- Encourage participants to visualise applying these strategies they have learned in the group in the anticipated situations, and practice responding to them aloud.

## **Home Exercises**

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- Complete Behavioural Challenge form (to be emailed)
- Engage in one act of body activism (to be emailed)
- Write an email letter to a teenage girl telling her how to avoid developing body image concerns (to be emailed)

## **Wrap-Up**

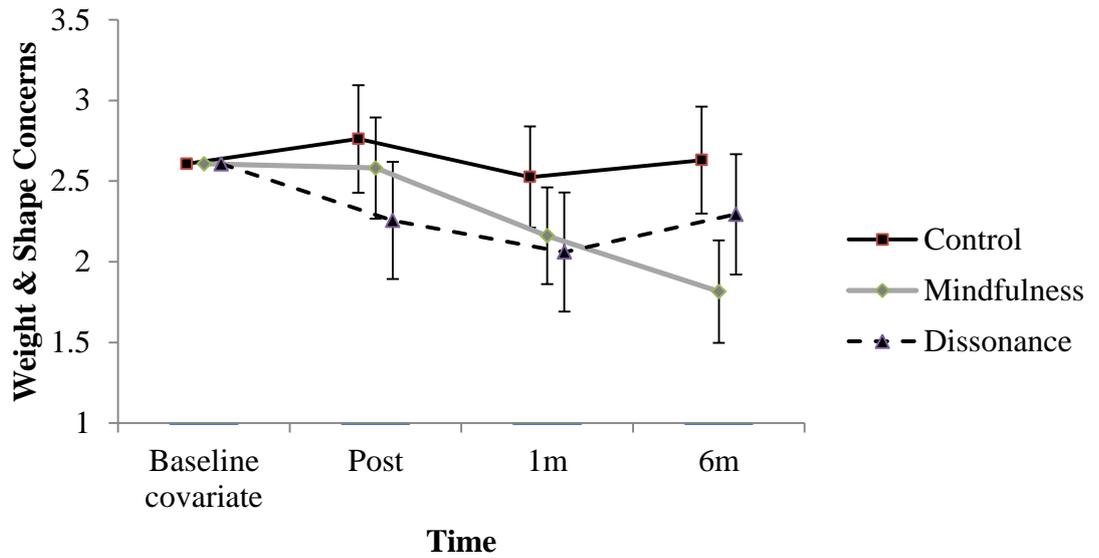
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*Well, this concludes the final session. Do you feel that this program has helped reduce your body image concerns? Have you noticed anything different about how you feel about your body?*

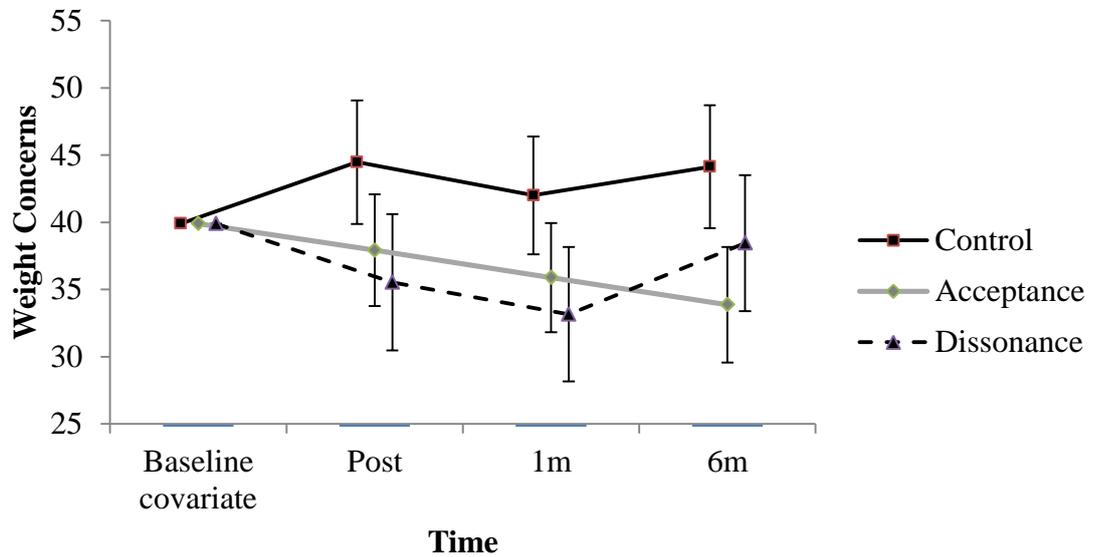
- Review any positive changes

**Appendix C**  
**Additional Graphs and Tables**

**Graphical representations of Condition by Time interactions for the facilitator subset analysis of Chapter 6**



*Figure C.1.* Weight and shape concerns over time, by condition. Error bars represent 95% confidence intervals.



*Figure C.2.* Weight concerns (screen) over time, by condition. Error bars represent 95% confidence intervals.

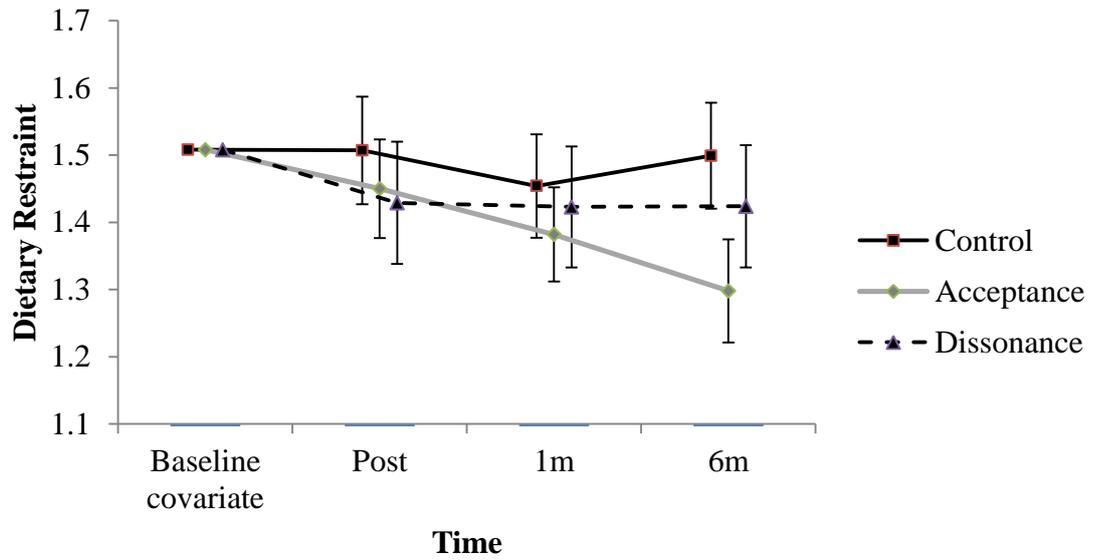


Figure C.3. Dietary restraint over time, by condition. Error bars represent 95% confidence intervals.

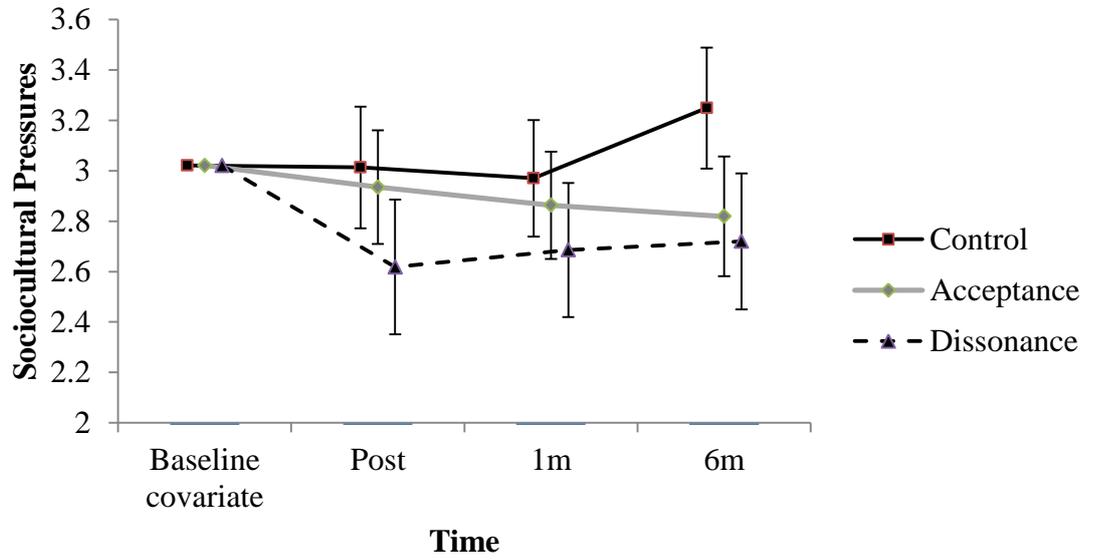


Figure C.4. Sociocultural pressures over time, by condition. Error bars represent 95% confidence intervals.

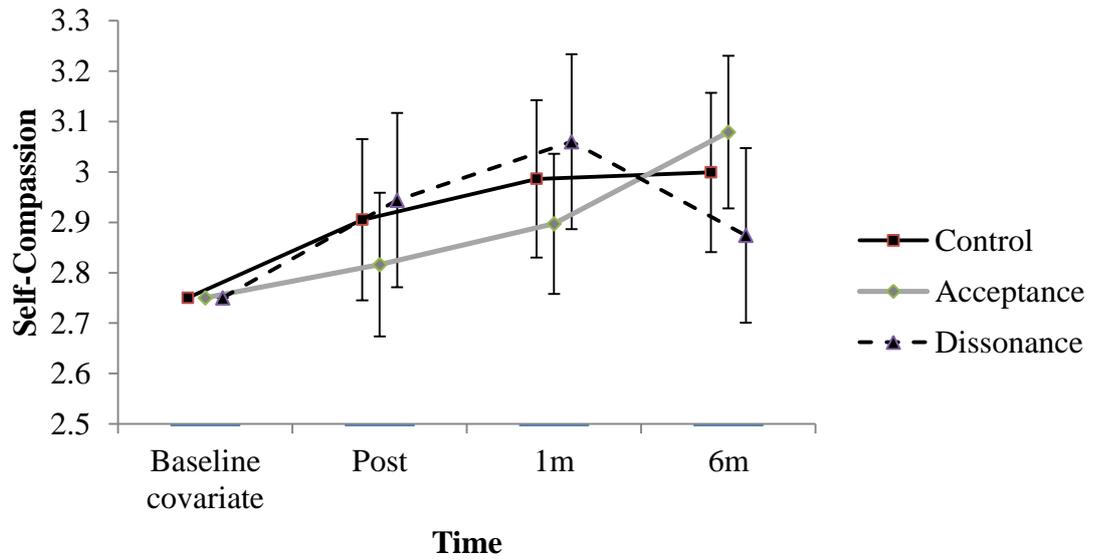


Figure C.5. Self-compassion over time, by condition. Error bars represent 95% confidence intervals.

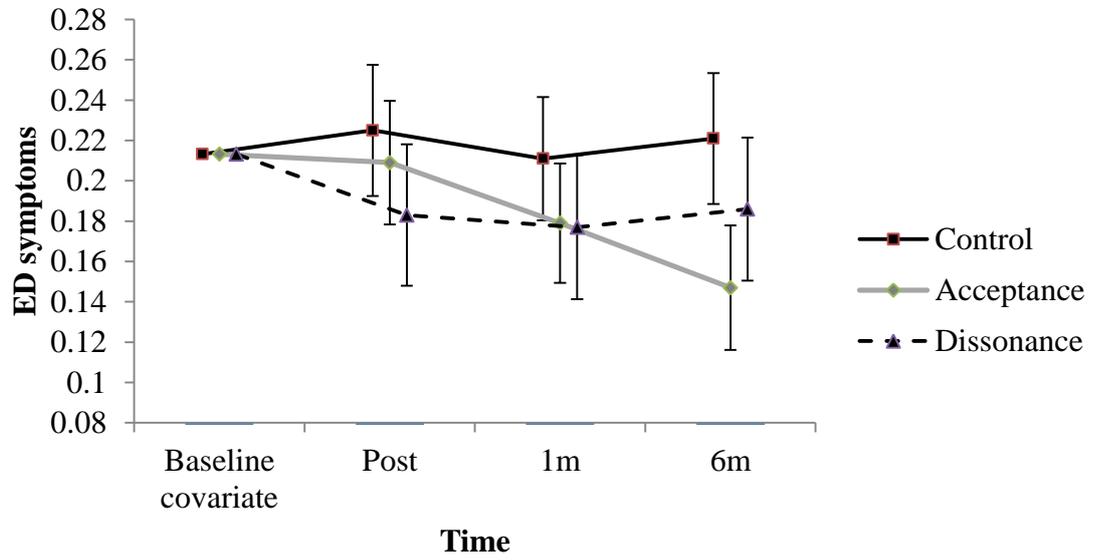


Figure C.6. Eating disorder symptoms over time, by condition. Error bars represent 95% confidence intervals.

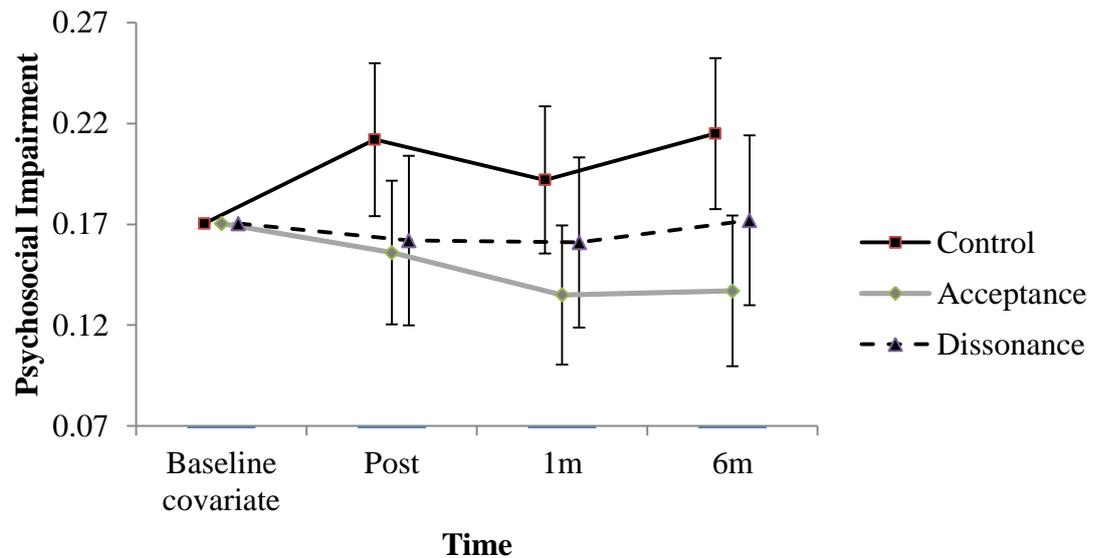


Figure C.7. Psychosocial impairment over time, by condition. Error bars represent 95% confidence intervals.

### Clinical significance for the facilitator subset of Chapter 7

The number and percentage of participants who experienced clinically significant change based on reliable change indices from baseline to 6-month follow-up is presented in **Table C.1**. Consistent with the linear mixed model analyses, there were more participants who experienced clinical improvement in mindfulness relative to control for dieting,  $LR\chi^2(1) = 8.43, p = .027, OR = 13.97, 95\% CI [0.77-254.05]$ , weight and shape concerns,  $LR\chi^2(1) = 6.98, p = .057, OR = 11.61, 95\% CI [0.63-214.91]$ , and eating disorder symptoms,  $LR\chi^2(1) = 6.98, p = .057, OR = 11.61, 95\% CI [0.63-214.91]$ . There were also more dissonance participants who experienced clinical improvement relative to control for weight and shape concerns,  $LR\chi^2(1) = 7.33, p = .026, OR = 14.18, 95\% CI [0.74-271.18]$ .

Table C.1  
*Number and Percentage of People Who Experienced Clinically Significant Change Based on Reliable Change Indices from Baseline to 6-Month Follow-up*

Variable	Control (n = 51)		Mindfulness (n = 56)		Dissonance (n = 38)	
	↑n (%)	↓n (%)	↑n (%)	↓n (%)	↑n (%)	↓n (%)
<i>Primary outcomes</i>						
Weight & Shape Concerns	0 (0)	1 (2)	5 (9)	0 (0)	4 (10)	1 (3)
Weight Concerns (screen)	1 (2)	7 (12)	7 (12)	3 (5)	5 (13)	3 (8)
Negative Affect	1 (2)	0 (0)	2 (3)	0 (0)	0 (0)	0 (0)
<i>Secondary outcomes</i>						
Dietary restraint	0 (0)	5 (9)	6 (10)	0 (0)	1 (3)	1 (3)
Thin-ideal internalisation	0 (0)	2 (4)	1 (2)	1 (2)	2 (5)	1 (3)
Sociocultural pressures	1 (2)	2 (4)	5 (9)	2 (3)	4 (10)	0 (0)
Self-Compassion	4 (7)	1 (2)	4 (7)	0 (0)	0 (0)	0 (0)
Emotion Dysregulation	2 (4)	1 (2)	1 (2)	0 (0)	0 (0)	1 (3)
Escape-Avoidant Coping	4 (7)	0 (0)	6 (10)	4 (7)	4 (10)	1 (3)
ED symptoms	0 (0)	1 (2)	5 (9)	1 (2)	0 (0)	1 (3)
Psychosocial Impairment	0 (0)	6 (11)	3 (5)	1 (2)	1 (3)	1 (3)

Note. ↑ = significant improvement, ↓ = significant deterioration

### Program Acceptability for the facilitator subset of Chapter 6

Means and standard deviations for program acceptability ratings taken at post-intervention are presented in **Table C.2**. As for the whole sample of Chapter 6, there were no significant differences between interventions for perceived improvement in body image, level of enjoyment, ease of use, or effectiveness. In the current sample there were additionally no significant differences between interventions for the amount of attention paid or completion of homework tasks. However, despite slightly higher ratings for understanding of concepts and facilitator confidence than for the whole sample, mindfulness participants still rated these items (as well as likelihood of continued use) lower than dissonance participants.

Table C.2  
*Post-Intervention Assessment of Program Acceptability*

<b>Variable</b>	<b>Mindfulness</b>	<b>Dissonance</b>	<i>t(p)</i>	<i>d</i>
	<i>M (SD)</i>	<i>M (SD)</i>		
Improvement in body feelings <sup>a</sup>	3.14 (0.76)	3.11 (0.58)	0.19 (0.848)	0.04
Enjoyment <sup>a</sup>	2.49 (0.77)	2.76 (0.96)	-1.44 (0.154)	0.31
Attention paid <sup>b</sup>	3.14 (0.96)	3.47 (0.74)	-1.72 (0.089)	0.38
Homework completion <sup>a</sup>	1.71 (0.82)	1.92 (1.01)	-1.04 (0.302)	0.23
Facilitator confidence <sup>a</sup>	4.12 (0.81)	4.54 (0.65)	-2.58 (0.012)	0.56
Understanding <sup>b</sup>	3.71 (0.97)	4.46 (0.65)	-4.07 (<.001)	0.88
Ease of use <sup>a</sup>	3.27 (1.02)	3.41 (0.87)	-0.67 (0.502)	0.15
Effectiveness <sup>a</sup>	2.37 (1.04)	2.70 (0.97)	-1.53 (0.130)	0.32
Likelihood of continued use <sup>a</sup>	1.94 (1.01)	2.41 (0.83)	-2.29 (0.025)	0.50

