

RESEARCH FINAL REPORT

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**Body image, eating
disorder and depressive
symptom outcomes
following a school-based
body image prevention
intervention: A one year
follow-up study**

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Main Messages

The *Happy Being Me* peer- and media-based prevention intervention for early adolescent girls provides **positive immediate benefits** for

- Body dissatisfaction and weight and shape concerns
- Depressive symptoms
- Dietary restraint
- Internalisation of the thin ideal
- Media literacy
- Expectancies of thinness

and **sustained benefits** over a 6- or 12-month period for

- Depressive symptoms
- Internalisation of the thin ideal
- Appearance comparisons
- Appearance conversations
- Media literacy
- Expectancies of thinness
- Self-esteem

Participants with **high levels of depressive symptoms** benefitted from participating in the Happy Being Me program.

Preliminary findings indicate that the **media literacy component** of the program is successful and leads to change in internalisation of the thin ideal and appearance comparisons.

The *Happy Being Me* program was favourably received by student participants.

Findings suggest dissemination of the program would be valuable.

Future research should examine the potential positive effects of including **“booster” lessons**.

Future research should examine the effects of including **additional modules addressing negative affect**.

Executive Summary

AIM

There is a close association between eating and body image disorders and depressive symptoms. In particular, body dissatisfaction predicts increases in depressive symptoms and low self-esteem in adolescent girls and boys. In light of these relationships it might be anticipated that a prevention program that successfully reduces body dissatisfaction and its risk factors would also have a positive impact on depressive symptoms.

Consequently, the primary aim of this research was to examine the impact on body image, eating disorder and depressive symptoms of a body image intervention program, *Happy Being Me*, for year 7 girls, over a one year period. We hypothesised that:

- 1) Girls who receive the intervention compared with a control group of girls who do not, will show significantly lower levels of depressive symptoms, body dissatisfaction, unhealthy dietary restraint, bulimic symptoms, internalisation of the thin ideal, body comparison, appearance conversations, expectancies of thinness, and higher media literacy and self-esteem;
- 2) Girls with higher depressive symptoms at baseline who receive the program compared to those who do not will have lower depressive symptoms.

METHOD

Year 7 girls (n=488) were allocated to either an intervention or no intervention control condition. The intervention group received the *Happy Being Me* program that focussed on addressing media and peer influences on body image in 6 interactive class-room sessions. Participants completed assessments of body image concerns, negative affect, disordered eating, and sociocultural peer and media influences at baseline, post-program, six-month follow-up and one year follow-up.

KEY FINDINGS

Supporting our first hypothesis, at post-test the intervention group had significant improvements in depressive symptoms, body dissatisfaction, weight and shape concern, dietary restraint, internalisation of the thin ideal, media literacy and expectancies of thinness. At follow-up there were improvements in depressive symptoms, internalisation of the thin ideal, appearance comparisons, appearance conversations, media literacy and expectancies of thinness.

Supporting our second hypothesis, girls with higher depressive symptoms at baseline who received the program compared to those who did not had lower depressive symptoms at post-test.

SECONDARY FINDINGS

Supplementary studies were conducted on baseline data to examine relationships between variables to shed light on the contribution of risk factors to body dissatisfaction and disordered eating.

The first study found that high levels of media literacy, which is defined as critical analysis and understanding of media images and messages, was associated with low levels of body dissatisfaction. The relationship between these variables was mediated by internalisation of the thin ideal and by appearance comparisons. These cross-sectional findings can be interpreted as indicating that higher media literacy acts on the internalisation and comparison processes to reduce the persuasive impact of external influences such as media, which may thus be protective against the development of body dissatisfaction.

The second study found that a biopsychosocial model accounted for high proportions of variance in body dissatisfaction and disordered eating. The analysis of the model showed that negative affect, which comprised depressive symptoms and self-esteem, body mass index, and sociocultural influences were related to body dissatisfaction and disordered eating, via the mediating processes of internalisation of the thin ideal and appearance comparisons. Notably, the study also found a strong direct relationship between negative affect and bulimic symptoms, indicating that negative affect may be particularly important in the development of disordered eating.

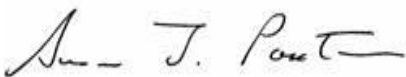
DISCUSSION AND RECOMMENDATIONS

The findings from this study showed that the *Happy Being Me* program is a valuable prevention intervention that achieved promising results in reducing risk factors for body dissatisfaction and improving psychological well-being. In addition, the program was very favourably received by early adolescent girls.

The outcomes of the study compare positively with previous prevention intervention research in terms of the immediate benefits of the program, but particularly in relation to the observed long term improvements in key risk factors and variables that contribute to well-being. Importantly, the findings extend current understanding of prevention interventions through an examination of mediation effects. These effects suggest that improving media literacy leads to improvements in internalisation of the thin ideal and appearance comparisons.

The positive outcomes achieved from the *Happy Being Me* program indicate that dissemination of this program into schools would provide benefit for early adolescent girls in reducing risk factors for body dissatisfaction and disordered eating and in improving psychological well-being.

Future research could build on the value of this study by investigating the inclusion of depression and self-esteem modules, the addition of “booster” sessions to attempt to sustain the immediate benefits of the program, or to evaluate the benefits of directly addressing body dissatisfaction.



Professor Susan J. Paxton

Research output

A number of paper presentations at national and international conferences have been made regarding the preliminary findings for the study. In addition, one scientific paper has been published in an international peer review journal, and a second study has been recently submitted for publication.

Peer reviewed publications

- McLean, S.A., Paxton, S.J., & Wertheim, E.H. (2013). Relationships between media literacy and eating disorder risk factors in early adolescent girls: Implications for prevention. *Body Image 10*, 283-289. Impact Factor 1.90.
- Rodgers, R.F., Paxton, S.J. & McLean, S.A. A Biopsychosocial Model of Body Image Concerns and Disordered Eating in Early Adolescent Girls, to *Journal of Youth and Adolescence*. (Submitted to *Journal of Youth and Adolescence* (Impact Factor 2.717) 21 June 2013)

Conference presentations

- McLean, S.A., Paxton, S.J., & Wertheim, E.H. Does Media Literacy Mediate Intervention Effects in a Peer and Media Literacy Body Dissatisfaction Prevention Intervention for Early Adolescent Girls? Paper presented at the 2013 AED International Conference on Eating Disorders, Montreal, May 2-4, 2013
- McLean, S.A. & Paxton, S.J. Sociocultural and Peer Predictors of Disordered Eating: Differences between Early Adolescent Girls from Australian, Middle-Eastern and Asian Backgrounds. Paper presented at the 2013 AED International Conference on Eating Disorders, Montreal, May 2-4, 2013
- McLean, S.A., Paxton, S.J. & Wertheim, E.H. Relationships between media literacy and risk factors for eating disorders in early adolescent girls: Implications for prevention. Paper presented at the 2012 AED International Conference on Eating Disorders, Austin, Tx, May 3rd - 5th, 2012.
- McLean, S.A., Paxton, S.J. & Wertheim, E.H. Relationships between media literacy and risk factors for eating disorders in early adolescent girls: Implications for prevention. Paper presented at the 9th Annual Conference of the Australian and New Zealand Academy for Eating Disorders, Coogee Beach, Sydney, 26th - 27th August, 2011.

Report

INTRODUCTION

Prevalence and consequences of eating and body image disorders

The prevalence of eating and body image disorders is at concerning levels in adolescent girls. Between 44% and 77% of adolescent girls experience body dissatisfaction or want to be thinner (Bearman, Presnell, Martinez, & Stice, 2006; Ricciardelli & McCabe, 2001), while 15% of children aged 8-13 have been found to engage in binge eating or overeating (Allen, Byrne, La Puma, McLean, & Davis, 2008), similar to the prevalence rate for binge eating (17%) found for 16 year old females (Haines et al., 2011). In addition, dieting is very common in adolescents with more than 50% of early- and middle-adolescent girls reporting dieting (Neumark-Sztainer, Wall, et al., 2006; Westerberg-Jacobson, Ghaderi, & Edlund, 2012). More concerning, similar proportions report the use of unhealthy weight control behaviour such as fasting, skipping meals, using a food substitute, vomiting, and taking laxatives or diuretics (Neumark-Sztainer, Wall, et al., 2006). Also of concern is the increase in body dissatisfaction and disordered eating behaviour, including the use of unhealthy weight control behaviours that is observed from early- to middle-adolescence. Prospective studies indicate that these concerns tend to peak in middle- to late-adolescence (Abebe, Lien, & von Soest, 2012) and remain constant through to early adulthood (Neumark-Sztainer, Wall, Larson, Eisenberg, & Loth, 2011).

Although body dissatisfaction is sometimes considered a benign concern, the potential negative consequences can be very serious. In addition to the distress experienced in conjunction with body dissatisfaction (Johnson & Wardle, 2005), prospective studies have shown that body dissatisfaction is a risk factor for overweight and obesity (Haines, Kleinman, Rifas-Shiman, Field, & Austin, 2010; van den Berg & Neumark-Sztainer, 2007), for the development of low self-esteem (Paxton, Neumark-Sztainer, Hannan, & Eisenberg, 2006; Tiggemann, 2005), and the development of eating disorders (Killen et al., 1996; Stice, Marti, & Durant, 2011; The McKnight Investigators, 2003).

Disordered eating and unhealthy weight control behaviours can be debilitating and are associated with reduced quality of life (Mitchison, Mond, Slewa-Younan, & Hay, 2013; Mond, Hay, Rodgers, & Owen, 2009). In addition, these behaviours have the potential to lead to negative physical and mental health outcomes, in particular, clinical eating disorders (Stice, et al., 2011).

Association with depressive symptoms

There is a close association between eating and body image disorders and depressive symptoms. In clinical eating disorders co-morbidity with clinically significant depression is frequently observed. For example, in a treatment trial of a community sample of patients with bulimia nervosa, a current major depressive episode was diagnosed in 17.5% of patients (Banasiak, Paxton, & Hay, 2005). However, the close association between depressive and eating disorder symptoms may also be observed earlier in the developmental pathway to clinical disorder.

The pathway to clinical eating and body image disorders may be seen as a continuum from healthy eating and body image to moderate levels of eating disorder and body image symptoms, to clinical eating and body image disorders (Neumark-Sztainer, Levine, et al., 2006; Paxton, 2008). There is considerable evidence

linking early body dissatisfaction and eating disorder symptoms and depressive symptoms. For example, consistent with other research (Holsen, Kraft, & Roysamb, 2001; Stice & Bearman, 2001), we have observed that body dissatisfaction predicts increases in depressive symptoms and low self-esteem over a five year period in adolescent girls and boys (Paxton, et al., 2006). Furthermore, adolescents with partial syndrome eating disorders have been shown to have a higher likelihood of depressive syndromes in early adulthood (Patton, Coffey, Carlin, Sanci, & Sawyer, 2008). In light of these relationships it might be anticipated that a prevention program that successfully reduces body dissatisfaction and eating disorder symptoms (e.g., use of extreme weight loss behaviours and binge eating) would also have a positive impact on depressive symptoms. Certainly, in support of this contention, early intervention and treatment programs are frequently observed to have a positive impact on depressive symptoms (e.g., Banasiak, et al., 2005; Heinicke, Paxton, McLean, & Wertheim, 2007; Paxton, McLean, Gollings, Faulkner, & Wertheim, 2007).

Prevention research

A growing body of research has explored the efficacy of prevention interventions for body image and disordered eating, although early prevention programs for girls with no or few symptoms have met with only limited success (e.g., Stice, Shaw, & Marti, 2007). Public health theory highlights the fact that a reduction in causal risk factors or early symptoms of a problem is likely to have the effect of reducing the frequency and intensity of the clinical manifestation because this strategy breaks the developmental sequence and movement up this continuum (e.g., Austin, 2001; Jacobi, Hayward, de Zwaan, Kraemer, & Agras, 2004). In addition, ideally, prevention should be implemented before the onset of symptoms. With these considerations in mind, a number of recent prevention programs have aimed to achieve change in particularly salient risk factors for development of body dissatisfaction and extreme weight loss behaviours in early adolescence when symptoms are typically low (e.g., Bird, Halliwell, Diedrichs, & Harcourt, In press; Franko, Cousineau, Rodgers, & Roehrig, In press; Richardson & Paxton, 2010; Richardson, Paxton, & Thomson, 2009; Ross, Rodgers, & Paxton, In press; Wilksch, Durbridge, & Wade, 2008; Wilksch & Wade, 2009). Risk factors for body dissatisfaction that have been particular targets due to the fact that they are potentially modifiable include internalisation of the thin media ideal, frequent body comparison, engagement in appearance conversations and appearance teasing (e.g., Paxton, Schutz, Wertheim, & Muir, 1999; Wertheim, Paxton, & Blaney, 2009). Additional risk factors for eating disorders include use of extreme weight loss strategies and binge eating. Focus on these factors has proved valuable in early intervention programs (e.g., Heinicke, et al., 2007).

We have recently evaluated a very promising innovative, theoretically derived, prevention intervention for young adolescent girls, *Happy Being Me* (Richardson & Paxton, 2010). This brief 3-lesson classroom curriculum specifically aimed to provide girls with information and skills to counteract the strong social factors that support body image problems and disordered eating, including peer and media pressures. The intervention also aimed to change the peer environment to reduce appearance conversations and appearance teasing. In this intervention very positive body image outcomes and also reductions in appearance conversations, body comparison and bulimic symptoms in the experimental compared to the control group were observed. These findings have been replicated in a recent study in late primary school-aged girls in the UK (Bird, et al., In press). However, for both studies, the sample sizes were quite small (N=194, and N=42 respectively) and the follow-up period only three months. In addition, possible changes in depressive symptoms were not examined.

Media literacy curricula which aims to increase critical thinking about media images and messages, have also been shown to have positive outcomes (Wilksch, et al., 2008; Wilksch & Wade, 2009). We have also evaluated the short-term outcome of a media literacy program, *BodyThink*, which is being widely distributed in Victoria by the Butterfly Foundation (Richardson, et al., 2009). This study also showed promising but weaker results than the peer-based programs, especially in relation to body comparison and internalisation of the thin ideal. These findings suggest that an integration of peer based and media literacy approaches may be particularly effective.

It would be extremely valuable to build on this body of research and to conduct a study examining the effects of a combined peer and media literacy intervention with a wider variety of students, in a satisfactory sample, and over an extended follow-up. The inclusion of a range of outcome measures including assessment of body image, eating behaviours and depressive symptoms to examine whether depressive symptoms at the time of the intervention influence the impact of the intervention would also add value to the study.

Aims and hypotheses

We aimed to examine the impact on body image, eating disorder and depressive symptoms of an enhanced version of *Happy Being Me*, for year 7 girls, over a one year period. We hypothesised that:

- 1) Girls who receive the intervention compared with a control group of girls who do not, will show significantly lower levels of depressive symptoms, body dissatisfaction, unhealthy dietary restraint, bulimic symptoms, internalisation of the thin ideal, body comparison, appearance conversations, expectancies of thinness, and higher media literacy and self-esteem;
- 2) Girls with higher depressive symptoms at baseline who receive the program compared to those who do not, will have lower depressive symptoms.

METHOD

Design

Two randomly assigned groups (intervention and control) were assessed at four time points. In the case of the intervention group these were at baseline (prior to implementation of the program), post-program (1-2 weeks after program completion), six-month follow-up (about 8 months after baseline) and one-year follow-up (about one year and 8 weeks after baseline). The control group was assessed at baseline, 8 weeks later, six-month follow-up (about 8 months after baseline) and at one-year follow-up (about one year and 8 weeks after baseline). The intervention group received the prevention intervention lessons following completion of the baseline assessment and prior to the post-program assessment.

Participants

A sample of 488 year 7 school girls were recruited from two co-educational and one single-sex school from the Melbourne metropolitan area. The socio-economic status of schools ranged from low to medium to high. All participants provided written parental consent to be involved the study. The majority of participants reported being born in Australia or New Zealand (87.3%). However, 4.8% indicated being born in South East Asia, 2.6% in the Middle-East, and the remaining 5.3% in other countries. Fewer than half of parents of participants were born in Australia or New Zealand (mothers: 43.0%; fathers: 36.1%); smaller

percentages were born in South East Asia (mothers: 14.1%; fathers: 11.5%), the Middle-East (mothers: 25.2%; fathers 28.1%), in European countries (mothers: 8.4%; fathers: 9.8%), other countries (mothers: 7.9%; fathers: 11.8%), or not reported (mothers: 1.4%; fathers: 2.7%).

Intervention Group

A total of 294 participants provided data at baseline. The mean age of participants was 12.39 years, and mean BMI was 20.64. Attrition was minimal and accounted for by absences on the day of assessment, or change in school at follow-up assessment. Post-program data was available for 280 participants, 6-month follow-up data available for 286 participants, and 12-month follow-up data available for 274 participants.

Control Group

A total of 194 girls provided data at baseline. The mean age of participants was 12.24 years, and mean BMI was 20.01. Attrition was also minimal for the control group with post-program data available for 191 participants, 6-month follow-up data available for 188 participants and 12-month follow-up data available for 185 participants.

Materials

Assessment measures

Body image concerns

Body dissatisfaction (e.g., dissatisfaction with the size of various body areas) was assessed using the Body Dissatisfaction subscale of the Eating Disorder Inventory (Garner, 1991). Example items include “I think that my stomach is too big” and “I like the shape of my buttocks”. Items were scored on a 6 point scale with higher scores indicating more marked body dissatisfaction.

The frequency and intensity of thoughts and feelings relating to shape and weight concerns were assessed using the Weight and Shape Concern subscales of the Eating Disorders Examination-Questionnaire (Fairburn & Beglin, 1994). Items were scored on a 7 point scale with higher scores indicating greater levels of shape and weight concerns. Example items include “Have you had a strong desire to lose weight?” and “Has your shape influenced how you think about (judge) yourself as a person?”.

Negative affect

The Children’s Depression Inventory-Short form (Kovacs, 1992) was used to assess depressive symptoms including “sadness”, “pessimism”, “self-depreciation”, “self-hate”, “crying spells”, “irritability”, “negative body image”, “loneliness”, “lack of friends”, and “feeling unloved”. Each item was scored on a three point scale with higher scores indicating higher levels of depressive symptoms. Example items include “I am sad once in a while”, “I look ugly”, “I feel alone all the time”.

Self-esteem (e.g., positive self-regard, sense of worth, self-respect) was assessed using The Rosenberg Self-esteem Scale (Rosenberg, 1965). Example items include “On whole I am satisfied with myself”, “I feel I am a person of worth, at least as good as others”, and “I certainly feel useless at times”. Items were scored on a 4-point scale with higher scores indicating higher levels of self-esteem.

Disordered eating

The Dutch Eating Behaviours Questionnaire Restraint subscale (Van Strien, Frijters, Bergers, & Defares, 1986) was used to assess extent of deliberate weight control and food restriction. Example items include “When you have eaten too much do you eat less than usual the following days?” and “Do you watch exactly

what you eat?” Items were scored on a 5 point scale with higher scores indicating higher levels of restriction.

Bulimic symptoms (e.g., bingeing, purging) were assessed with the Bulimia subscale of the Eating Disorder Inventory (Garner, 1991). Items were scored on a 6 point scale with higher scores indicating more intense bulimic symptomatology. Example items include “I stuff myself with food” and “I eat when I am upset”.

Sociocultural and peer influences

The internalisation subscale of the Sociocultural Attitudes Towards Appearance Questionnaire (Thompson, van den Berg, Roehrig, Guarda, & Heinberg, 2004) was used to assess internalisation of the thin-ideal (e.g., the degree to which participants adopt the social standard of thinness as their own). Items were scored on a 5 point scale with higher scores indicating higher levels of internalisation. Example items include “I would like my body to look like the people who are on TV” and “I wish I looked like models in music videos”.

The extent to which participants believed that they will receive positive benefits from thinness was assessed with the Expectancies of Thinness subscale of the Media Attitudes Questionnaire (Irving, DuPen, & Berel, 1998). Items were scored on a 5 point scale with higher scores indicating higher expectancies of positive outcomes from thinness. Example items include “Being thin makes you happier” and “Being thin helps you make more friends”.

The degree to which participants tended to compare their physical appearance to that of other individuals in social situations was assessed using the Physical Appearance Comparison Scale (Thompson, Heinberg, & Tantleff, 1991). Example items include “In social situations, I compare my figure to the figures of other people” and “I compare my figure to the figure of others to know if I am overweight or underweight”. Items were scored on a 5 point scale with higher scores indicating greater tendencies for social comparison.

The extent to which participants discussed their appearance with their peers was assessed using the Appearance Conversation Scale (Jones, Vigfusdottir, & Lee, 2004). Example items include “My friends and I talk about how our bodies look in our clothes” and “My friends and I talk about how important it is to always look attractive”. Items were scored on a 5 point scale with higher scores indicating frequent conversation with peers about appearance.

Media influence

Media literacy (e.g., comparisons of realism and similarity between models in ads and the general population) was assessed using the Media Literacy subscale of the Media Attitudes Questionnaire (Irving, et al., 1998). Example items include “Typically women look like models in ads” and “Models in ads are beautiful”. Items were scored on a 5 point scale with higher scores indicating higher media literacy.

Frequency of exposure to screen-based media (e.g., computers) for non-homework activities was assessed using items from the Screen Habits measure (Utter, Neumark-Sztainer, Jeffery, & Story, 2003). Items were scored on a 6 point scale with higher scores indicating greater exposure to screen-based media. An example item is “In your free time on an average weekday, how many hours do you spend watching TV and DVDs?”.

Happy Being Me: Intervention program

The *Happy Being Me* intervention program comprises 6 lessons focusing on sociocultural risk factors for body dissatisfaction and disordered eating (see Table 1). The risk factors that are addressed in *Happy Being*

Table 1.

An outline of the aims and activities included in the *Happy Being Me* program

AIMS	CONTENT	PROCESSES
Session 1		
<ul style="list-style-type: none"> To understand appearance ideals To reduce internalisation of the cultural appearance ideal 	<ul style="list-style-type: none"> Appearance ideals <ul style="list-style-type: none"> What are they; where do they come from; what problems do they cause Appearance ideals do not equal admired values and qualities in others 	<ul style="list-style-type: none"> Facilitator presentation, class discussion Individual brainstorming and class discussion
Session 2		
<ul style="list-style-type: none"> To recognise appearance conversations (fat-talk) To understand the negative impact of fat-talk To develop skills for situations involving fat-talk and to reduce fat-talk 	<ul style="list-style-type: none"> What are appearance conversations and fat-talk? What problems are caused by fat-talk? Exploration of strategies that could be used during situations that involve fat-talk. 	<ul style="list-style-type: none"> Facilitator presentation, class discussion Pair activity and class discussion Group activity, role play, class discussion
Session 3		
<ul style="list-style-type: none"> To increase media literacy To reduce internalisation of the cultural appearance ideal 	<ul style="list-style-type: none"> The different techniques that are used by media to manipulate images (media images are not real) Purpose of advertising and creating images 	<ul style="list-style-type: none"> Film clip, worksheets and class discussion Group activity
Session 4		
<ul style="list-style-type: none"> To recognise appearance comparisons To understand the negative impact of appearance comparisons To develop skills for avoiding appearance comparisons 	<ul style="list-style-type: none"> What are appearance comparisons? How do girls feel after comparing themselves? Exploration of strategies that could be used instead of appearance comparisons Emphasis on positive qualities not related to appearance 	<ul style="list-style-type: none"> Facilitator presentation and class discussion Group worksheets and role play presentations Individual worksheets - homework
Session 5		
<ul style="list-style-type: none"> To recognise common eating concerns To develop solutions to common eating concerns To learn mindful eating 	<ul style="list-style-type: none"> What are common eating problems? Exploration of strategies to help others who may experience eating problems Exploration of mindful eating strategies 	<ul style="list-style-type: none"> Facilitator led discussion Group work and presentations Facilitator led mindful eating activity
Session 6		
<ul style="list-style-type: none"> To explore myths about the benefits of appearance ideals To revisit issues covered within the program 	<ul style="list-style-type: none"> Dissonance procedure to question the benefits of appearance ideals Review 	<ul style="list-style-type: none"> Facilitator presentation and class discussion Poster activity

Me are internalisation of the thin ideal, appearance conversations, media pressure to be thin, appearance comparisons, and pressure to engaging in restrictive eating or dieting. The lessons were designed to be engaging and interactive, rather than didactic in nature.

Procedure

Randomisation to condition

Due to practical considerations, classes rather than individuals were randomly allocated to the intervention or control conditions. In order to ensure similarity between participants in the different conditions but also reduce the possibility of spill-over effects from the intervention to control groups, classes from different years within the same school were randomly allocated to condition. For example, in 2010, year 7 classes in school A were allocated to the control condition, and in 2011, year 7 classes from the same school were allocated to the intervention condition.

Data collection

Data collection was conducted in supervised classroom settings in which scales and a measuring tape were available in a secluded area for students to collect their own height and weight measurements. At each of the four assessments, participants provided self-report information about their age, date of birth, country of birth and their parent's country of birth. Participants also completed a number of standardized and validated questionnaires, regarding negative affect, sociocultural influences, internalisation and comparison, body image concerns, dietary restraint, bulimic symptoms, media influence and appearance conversations. Due to the potential sensitivity of having weight measured by a researcher, participants could choose to not provide this information or to privately weigh themselves and record their own weight at each time interval. Body mass index scores were then calculated. The same data collection procedure was used for both intervention and control groups.

Intervention lesson implementation

The Happy Being Me intervention lessons were delivered to groups of 20 to 25 students within a classroom setting. The six lessons were 50-60 minutes in duration and were conducted at one week intervals. Lessons were delivered by a trained researcher and supervised by the classroom teacher.

RESULTS - PRELIMINARY FINDINGS

Baseline to post-program effects

Table 1 shows the baseline and post-program means and standard deviations for selected variables for the *Happy Being Me* and Control groups. To analyse the initial impact of the program, mixed between-within repeated measures analyses of variance (ANOVAs) were conducted with Time (x 2; baseline and post-program) the within subjects factor and condition (x 2; Happy Being Me and Control) the between subjects factor. Intervention effects are reflected by significant time by condition interactions. These interactions indicate that there are significant differences between the intervention conditions from baseline to post-program. For most variables reductions in scores indicate improvement. However, for media literacy, higher score are more desirable.

Participants in the *Happy Being Me* condition showed significant improvements in body dissatisfaction, weight and shape concerns, depressive symptoms, dietary restraint, internalisation of the thin ideal, media literacy and expectancies of thinness relative to control participants from baseline to post-program.

Changes from baseline to post-program in the expected direction were also seen for the Happy Being Me group for bulimic symptoms, appearance comparisons, appearance conversations, and self-esteem but these were not significantly different from the control group.

Table 1

Means, standard deviations and summary statistics for repeated measures ANOVA from baseline to post-program

Measure	T1		T2		<i>F</i> (baseline to post-program)	<i>p</i>
	Mean	<i>SD</i>	Mean	<i>SD</i>		
Body dissatisfaction					4.75 (1, 448)	.030
Happy Being Me	18.28	9.85	17.04	9.41		
Control	16.77	10.06	16.79	10.72		
Weight and shape concern					4.51 (1, 447)	.034
Happy Being Me	2.07	1.60	1.74	1.47		
Control	1.92	1.51	1.76	1.60		
Depressive symptoms					4.81 (1, 446)	.029
Happy Being Me	3.42	3.65	2.75	3.38		
Control	3.18	3.64	3.07	3.81		
Dietary restraint					6.24 (1, 446)	.013
Happy Being Me	2.40	1.00	2.17	0.99		
Control	2.29	1.04	2.23	1.07		
Internalisation of the thin ideal					13.51 (1, 449)	<.001
Happy Being Me	12.53	6.09	10.28	5.12		
Control	12.01	5.59	11.18	5.61		
Media literacy ^a					23.82 (1, 443)	.000
Happy Being Me	3.29	0.78	3.78	0.76		
Control	3.32	0.72	3.50	0.73		
Expectancies of thinness					17.17 (1, 444)	.000
Happy Being Me	2.57	1.17	2.19	1.15		
Control	2.51	1.16	2.49	1.16		

^a higher scores are more desirable.

SD = standard deviation

Impact on high depressive symptom group

A mixed within-between repeated measures ANOVA was conducted with a subsample of participants with high baseline depressive symptom scores. The analysis revealed that in participants with high baseline depressive scores, those in the intervention group who received the program had significantly greater

improvement in depressive symptoms from baseline to post-program than participants in the control group who did not receive the program ($F(1,177) = 7.98, p = .005$). Figure 1 shows the change in mean depressive symptom scores over time for the *Happy Being Me* and Control groups.

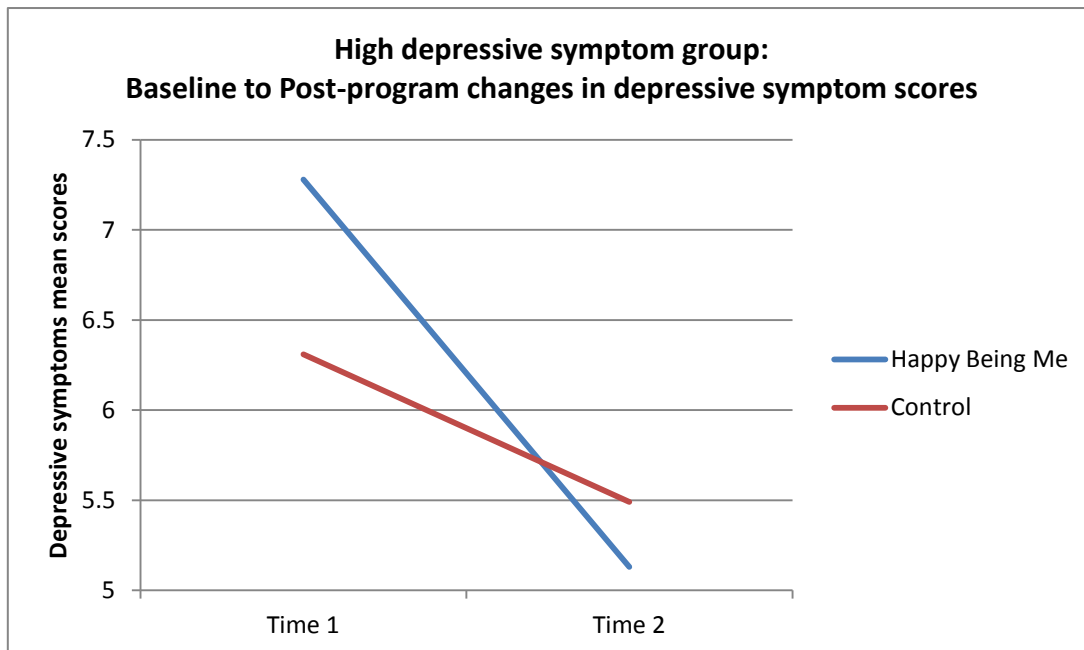


Figure 1. Change in depressive symptoms from baseline to post-program by condition for participants with high depressive symptom scores

Qualitative feedback

Participants who received the *Happy Being Me* intervention were asked to provide written comments about their most favourite and least favourite aspects of the program. Responses to the open ended questions were coded according to common themes.

Favourite aspect of the program

A total of 265 responses were received regarding favourite aspects of the program. Comments were included if they directly answered the question “*What was your favourite thing about the lessons?*” The most common response (22%) was that participants enjoyed sharing their opinions or hearing from others.

“I enjoyed discussing how we feel and our opinions. I didn't feel like I was the odd one out.”

“The fact that we could be honest with each other and it was interesting to see how other people felt about the issues we talked about.”

“My favourite thing was being able to say the truth and feel good about myself in front of my classmates.”

Participants also indicated that one of their most favourite aspects of *Happy Being Me* was discussing media pressures on body image and understanding the ways in which media manipulate images (11%)

“My favourite thing is when they showed us the clip about the dove photoshop thing because it really helped me see that they are not real and it made me feel better about my looks.”

“Watching the photoshopping videos and discovering that they're all fake.”

Participants also noted that their most favourite thing about the lessons was that they had been helped in some way by participating in *Happy Being Me*.

“They were all problems I came across before with a few exceptions and the class helped me know how to re-think next time, it feels better I'm not the only one that has negative thoughts about myself.”

“I learnt more about my body image, and skills to counter fat talk, appearance ideals, media images etc. The lessons taught me to feel more confident about myself.”

Least favourite aspect of the program

A total of 249 comments were received in response to the question “*What was your least favourite thing about the lessons?*” Comments that were related to the research component of the study, such as “*Having to do the survey*” were not included (N=14). The most commonly reported response (43%) was that participants did not have a least favourite thing about the lessons.

“I didn't dislike anything about the sessions.”

“I didn't have a least favourite thing, I enjoyed everything.”

The next most commonly reported response (11%) was related to having to having to do too much work, or write too many things down during the lessons.

“My least favourite thing was having to write in a work book because it was really not fun!”

“We often had to think a lot.”

The third most commonly reported least favourite aspect of the program (9%) was that students found the lessons to be boring or repetitive.

“Sometimes it got a bit boring.”

“Sometimes it repeated and repeated.”

Maintenance of effects

Due to a discrepancy with the data collected at follow-up, analyses of maintenance effects were carried out for two of the three schools involved in the study.

Medium-term follow-up

To examine the impact of the program over the medium term, repeated measures ANOVAs were conducted to compare the *Happy Being Me* and Control groups from baseline to 6-month follow-up.

Significant interaction effects indicating improvements to 6-month follow-up in the *Happy Being Me* condition relative to the control condition were found for internalisation of the thin ideals ($F(1,202) = 8.05$, $p = .005$), appearance comparisons ($F(1,200) = 9.89$, $p = .002$), media literacy ($F(1,199) = 4.94$, $p = .027$), and expectancies of thinness ($F(1,201) = 4.87$, $p = .028$).

Long-term follow-up

The longer term impact of the intervention was examined with repeated measures ANOVAs from baseline to 12-month follow-up. Significant interaction effects indicating improvements in the *Happy Being Me* condition relative to the Control condition were found for internalisation of the thin ideal ($F(1,185) = 4.27$, $p = .040$) appearance conversations ($F(1,184) = 6.29$, $p = .013$), media literacy ($F(1,184) = 5.06$, $p = .026$), depressive symptoms ($F(1,183) = 4.04$, $p = .046$), and self-esteem ($F(1,184) = 5.29$, $p = .023$).

Mediation of effects

A preliminary analysis was conducted on a subset of the data to investigate whether program outcomes at 6-month follow-up were mediated by immediate changes in media literacy from baseline to post-program. Bias corrected bootstrap analyses using structural equation modelling tested indirect effects of the *Happy Being Me* intervention on internalisation and comparison outcomes, via the mediating effects of media literacy change. Results of the analyses showed that the effects of the intervention on baseline to 6-month follow-up change in internalisation were indirect, that is, mediated by baseline to post-program change in media literacy ($\beta = -.044$, bias corrected 95% CI $(-.091, -.015)$). Similarly, the effect of the program on baseline to 6-month change in appearance comparisons was also mediated by media literacy ($\beta = -.031$, BC 95% CI $(-.072, -.005)$). The direct effect of the intervention on internalisation and comparisons was reduced, but not eliminated, in the mediated models, indicating partial mediation as shown in Figures 2 and 3.

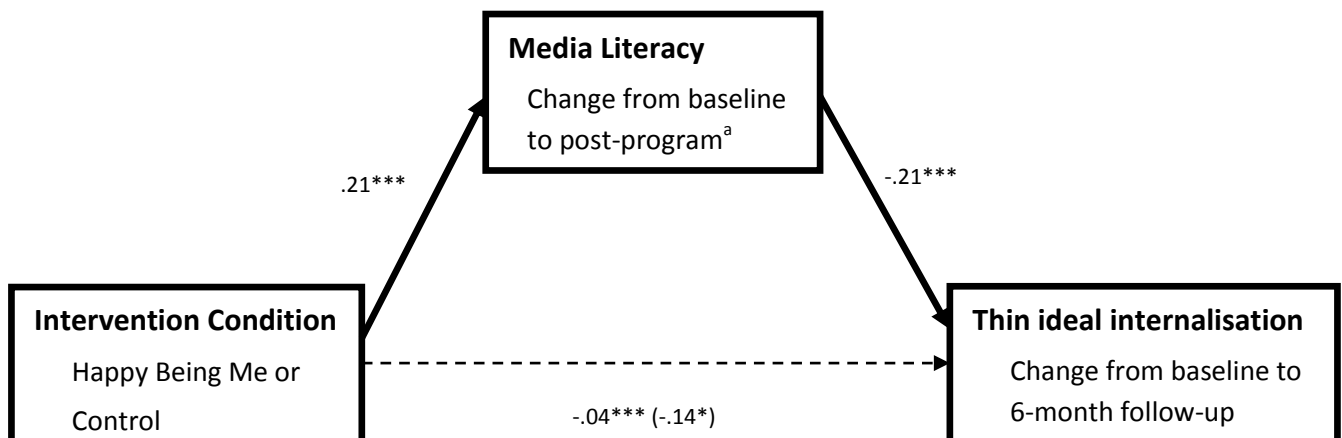


Figure 2. Path analysis showing standardised path coefficients of the indirect effect of the intervention on thin ideal internalisation via media literacy

Note. Value in brackets represents the direct pathway; ^a increases in scores are more desirable; * $p < .05$, *** $p < .001$

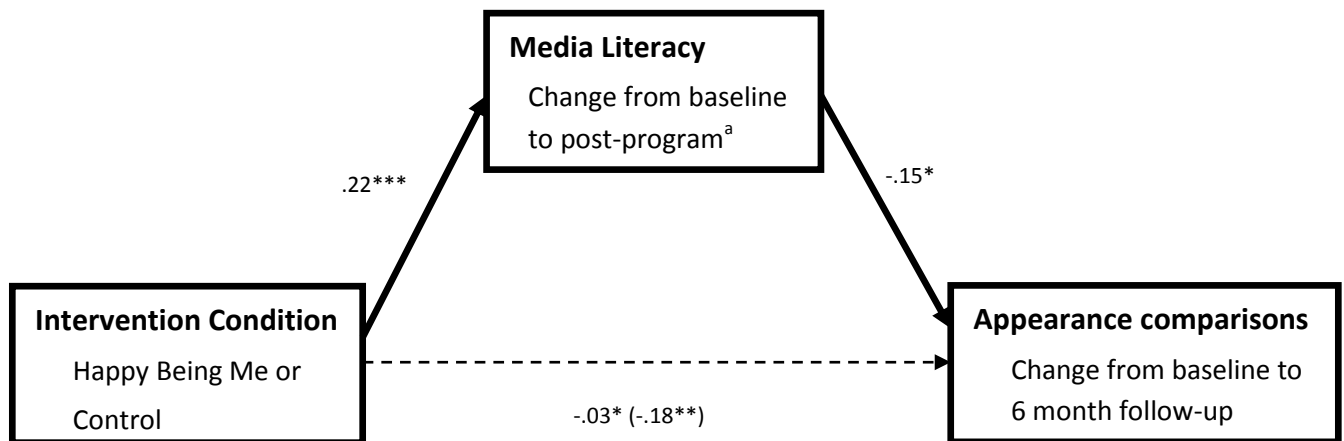


Figure 3. Path analysis showing standardised path coefficients of the indirect effect of the intervention on thin ideal internalisation via media literacy

Note. Value in brackets represents the direct pathway; ^a increases in scores are more desirable; * $p < .05$, *** $p < .001$

Additional findings

In addition to investigating the main aims of the study in relation to the outcomes of the intervention, further studies were undertaken to explore relationships between baseline variables in the total sample.

Supplementary study one

The first study (McLean, Paxton, & Wertheim, 2013) aimed to explore the relationship between media literacy and body image and related variables. Specifically, the study examined the fit of a theoretical model depicting the contribution of media literacy to body dissatisfaction via the mediating influences of internalisation of media ideals and appearance comparisons.

Correlations revealed small to moderate inverse relationships between media literacy and each of body dissatisfaction, internalisation, and appearance comparisons. Positive correlations were observed between body image variables (i.e., body dissatisfaction, internalisation, and appearance comparison) and media exposure. Path analysis showed that the model (see Figure 4) had very good fit to the data (Bollen-Stine $p = .51$, $\chi^2(5) = 4.64$, $p = .46$, GFI = .997, CFI = 1.00, RMSEA = .00). The model accounted for 58.0% of variance in body dissatisfaction, 46.0% of variance in internalisation, and 11.0% of variance in appearance comparisons. The direct effect of media literacy on body dissatisfaction was no longer significant in the multiple mediated model, $B = .03$, $SE = .02$, $p = .26$, indicating total mediation by appearance comparisons and internalisation.

Supplementary study two

The second additional study (Rodgers, Paxton, & McLean, Submitted) examined the contribution of biological, psychological and sociocultural variables to the prediction of body image concerns and disordered eating in early adolescent girls a biopsychosocial model. To fit this model, biological (body mass index) and psychological variables (negative affect) were added to widely used socioicultural models of the development of body image concerns and disordered eating. Examination of the predicted relationships using structural equation modelling revealed that the model had moderately good fit to the data, $\chi^2(34) = 148.43$, $p = .000$, CFI = .962, GFI = .946, RMSEA = .080. The model explained 84% of the variability in internalisation and comparison, 86% in the variability of body image concerns, 50% of dietary restraint, and 23% of the variability in bulimia (see Figure 5).

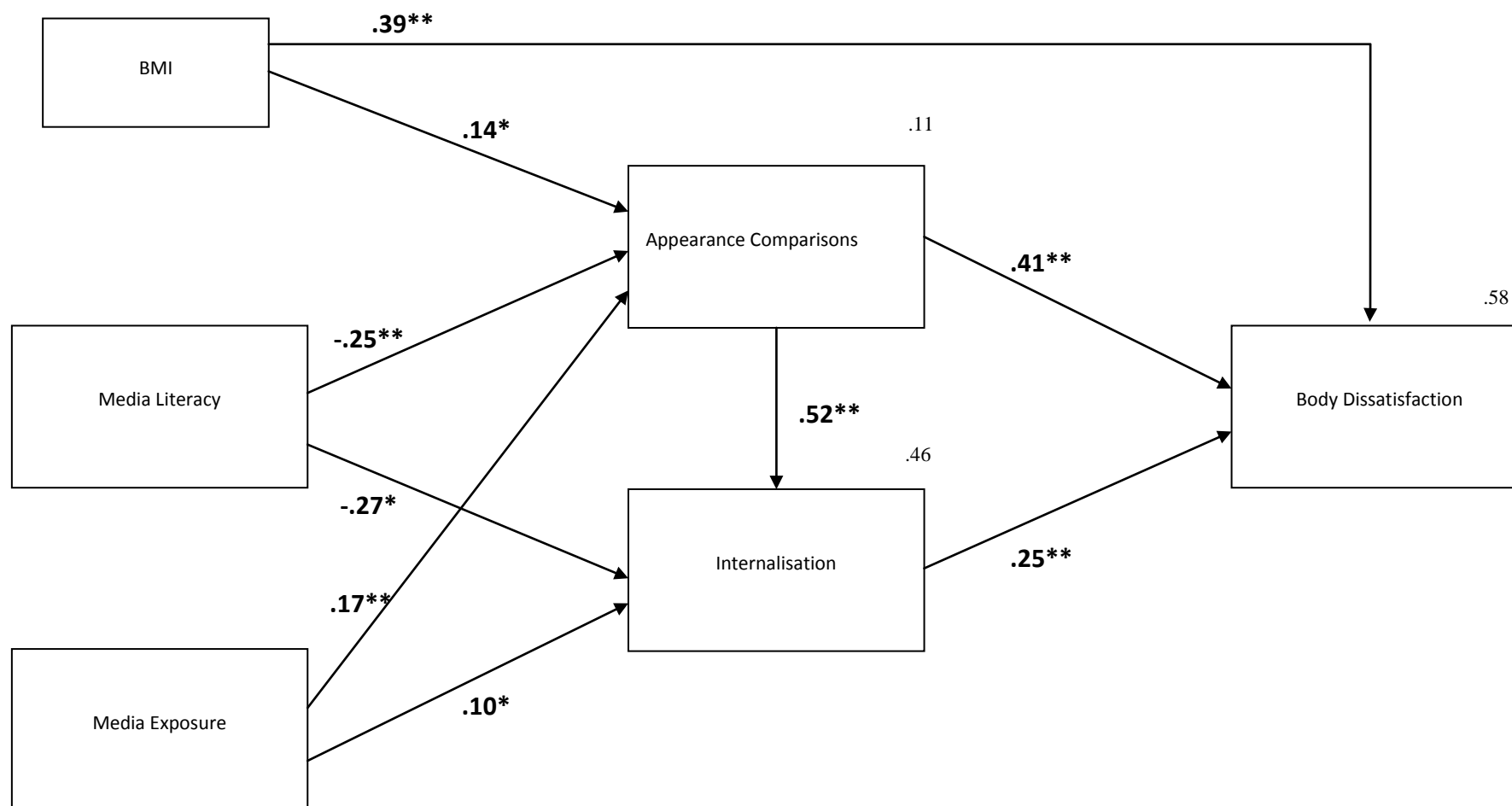


Figure 4. Path analysis model for supplementary study two with standardised path coefficients.

Note. Bolded numbers depict standardised coefficients, non-bolded numbers depict explained variance for each variable.

* $p < .05$; ** $p < .01$, p -values were obtained from bias corrected bootstrap sampling

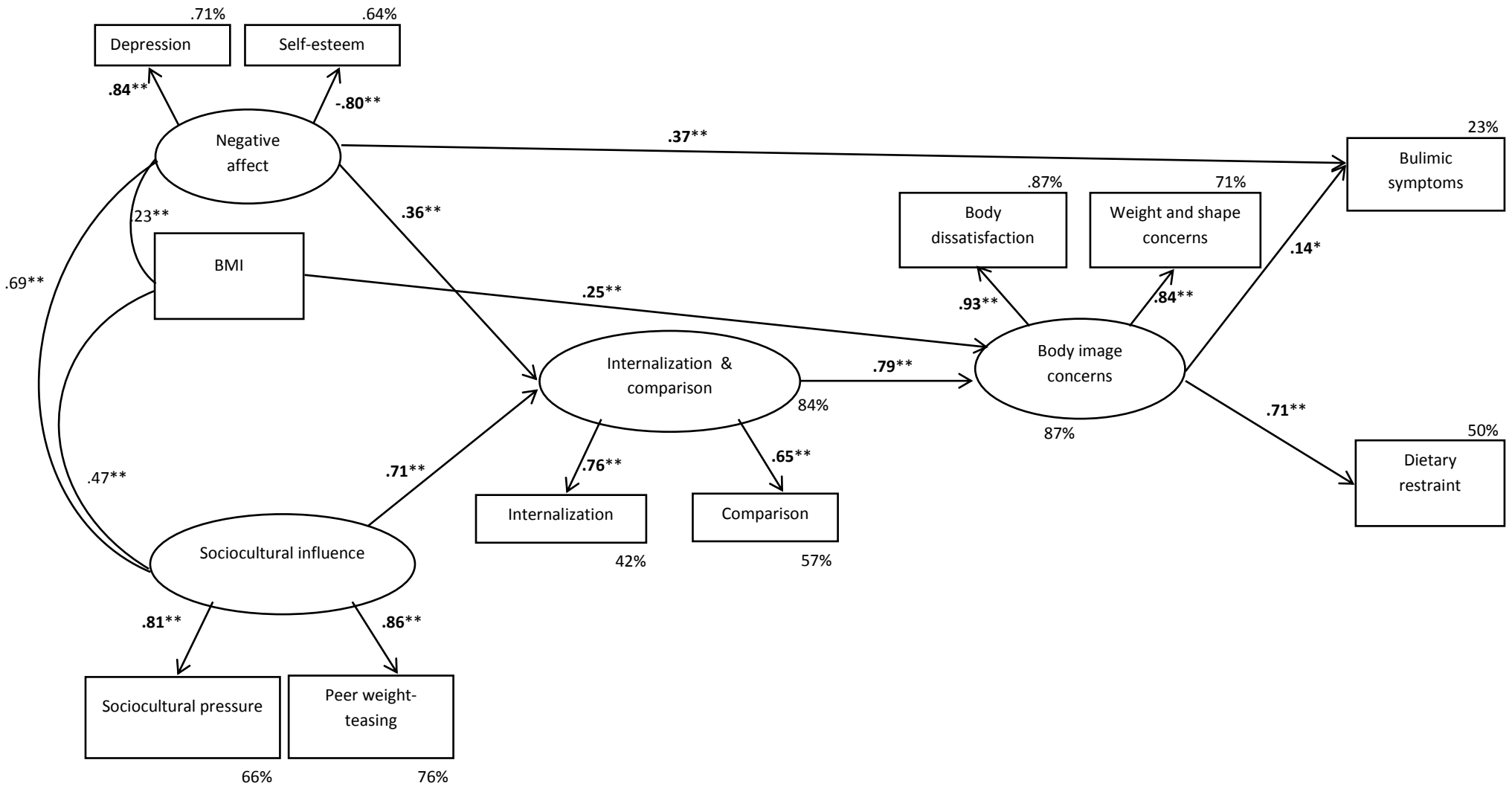


Figure 5. Structural model for supplementary study two with standardized path coefficients and explained variance
Note. Bolded numbers depict standardised coefficients, non-bolded numbers depict explained variance for each variable.
 * $p < .05$, ** $p < .001$

DISCUSSION

The main aim of this study was to evaluate the efficacy of an enhanced version of *Happy Being Me*, a developmentally appropriate, peer- and media-based prevention intervention for body dissatisfaction and disordered eating in adolescent girls. The outcomes for the study were very promising. Initial significant improvements from baseline to post-program were observed for the intervention group relative to the control group for body dissatisfaction, weight and shape concern, depressive symptoms, dietary restraint, thin ideal internalisation, media literacy and expectancies of thinness. Although immediate positive changes were not attained for bulimic symptoms, appearance comparisons, appearance conversations, and self-esteem, the findings for the medium and long term follow-up showed improvements for each of these variables with the exception of bulimic symptoms. At 6-month follow-up improvements were achieved for appearance conversations, and at 12-month follow-up positive changes were seen for appearance conversations, depressive symptoms and self-esteem. Importantly, improvements in thin-ideal internalisation and media literacy were also maintained at both 6- and 12-month follow-up and improvements in depressive symptoms were maintained at 12-month follow-up. Notably, analyses of change in the subset of participants with high depressive symptom scores showed reductions in depressive symptom scores in the intervention group relative to the control group. In addition, feedback from participants was very favourable indicating that the program was well received by early adolescent girls.

The findings for the enhanced version of *Happy Being Me* compare very favourably to outcomes from previous studies investigating the impact of the shorter 3-lesson version of the program (Bird, Halliwell, Diedrichs, & Harcourt, 2013; Richardson & Paxton, 2010), to media literacy based interventions (Richardson, et al., 2009; Wilksch & Wade, 2009) and to generalised risk-factor based intervention (Ross, et al., In press). Specifically, body dissatisfaction and weight and shape concerns showed improvements from baseline to post-program. Although some of the outcomes in the current study do not replicate previous findings, such as the lack of immediate changes in appearance comparisons and conversations, the observed longer term changes in these variables demonstrates the positive impact of the enhanced version of the *Happy Being Me* program.

Positive change in internalisation of the thin ideal was observed consistently at post-program, and medium- and long-term follow-up. As well as demonstrating the value of the program in producing sustained improvements, an achievement which has frequently failed to be produced in other evaluations of school based body image prevention research (Yager, Diedrichs, Ricciardelli, & Halliwell), this finding indicates that the intervention had its strongest effects on the factors that were directly addressed in the intervention. In particular, in the case of internalisation of the thin ideal, a number of different activities across three separate lessons were aimed to reduce internalisation. This suggests that repeatedly addressing a particular risk factor with different approaches, e.g., valuing qualities other than appearance (lesson one), media literacy (lesson three), and dissonance (lesson six) produces longer lasting effects.

Similarly, improvements in media literacy were also observed at each assessment point in the study. To our knowledge, this the first study of a media literacy-based body image and disordered eating prevention intervention that has measured of body image related media literacy (see Wilksch, et al., 2008; Wilksch & Wade, 2009). Improvement in this variable indicates that the media literacy component of the intervention was successful. In addition, assessing this variable has provided the opportunity to further understand the mechanisms of change that occur in prevention interventions. The analysis of mediation effects has

extended previous findings for media literacy interventions by demonstrating that the positive outcomes for internalisation of the thin ideal and appearance comparisons were partially accounted for by change in media literacy. This indicates that the assumptions underlying media literacy interventions, that media literacy approaches produce improvement in risk factors by reducing social persuasion through an interruption of appearance comparison and internalisation processes (Halliwell, Easun, & Harcourt, 2011; Wilksch & Wade, 2009), may have a solid foundation. Additional analyses of mediation effects will further our understanding of the ways in which the *Happy Being Me* program leads to positive change.

Contrary to expectations, improvements in body image and disordered eating were not maintained at long-term follow-up, whereas sustained change was observed for internalisation of the thin ideal, expectancies of thinness, media literacy, appearance comparisons and appearance conversations. Notably, these were all proximal targets of the intervention, whereas body dissatisfaction was not directly addressed. This finding suggests that directly addressing the area of concern may be the most effective way of achieving improvements.

Notably, the positive long term changes in depressive symptoms and self-esteem highlights the value of the current intervention in improving overall psychological functioning, an outcome that has been achieved in some (e.g., Richardson & Paxton, 2010), but not all studies (e.g., Bird, et al., 2013; Wilksch & Wade, 2009). Although depression and self-esteem were not the direct targets of the intervention, it appears that reductions in other risk factors may have had a positive impact on depressive symptoms and self-esteem. Further investigation of these relationships may illuminate the pathway of change.

Additional findings

The supplementary studies that were conducted during the course of this project provide important information about the relationships between risk factors in early adolescent girls.

The first of these supplementary studies showed that low levels of media literacy are related to high levels of body dissatisfaction and this relationship was accounted for by both internalisation of the thin ideal and appearance comparisons. Although previous studies have intimated at these relationships (Halliwell, et al., 2011; Wilksch & Wade, 2009), to our knowledge this is the first study to have tested the relationships between these variables. In doing so, the study has provided a possible explanation for the positive effects of media literacy interventions, an explanation that has been further explored in the evaluation of the current intervention trial.

The second of the supplementary studies demonstrated that the addition of biological and psychological factors to sociocultural models of body dissatisfaction and disordered eating explained a large proportion of variance in body image concerns and dietary restraint. Of note in this study was the finding that the pathways between negative affect and bulimia symptoms was stronger than the pathway between body dissatisfaction and bulimic symptoms, suggesting that the former relationship might be of particular importance in the development of bulimic symptoms in early adolescent girls. This finding strengthens the argument for considering depressive symptoms and self-esteem in body image and disordered eating interventions for this population.

Strengths

The strengths of this study include the large and ethnically diverse sample. Using random allocation of classes to the experimental conditions strengthened the design of the study. The intervention content was based on a strong theoretical rationale and addressed risk factors which have been empirically demonstrated to increase risk for the development of eating and body image disorders. Furthermore, the *Happy Being Me* lessons were favourably received by students and classroom teachers, indicating the acceptability of the program for dissemination in classrooms.

Limitations

Limitations to our study include the unequal number of participants in the two experimental conditions. A lower proportion of students allocated to the control condition compared with the intervention condition chose to participate in the study. This was likely a result of the lack of intervention class on offer to control students. It is possible that students allocated to the control condition who chose to participate had lower levels of body dissatisfaction and disordered eating than participants who did not choose to participate. The randomisation procedure employed in the study may also be a limitation for the study. Although the study was designed to reduce spill-over effects, it is possible that effects of the program were dispersed within the same school from intervention participants to participants in the control condition.

Significance of findings

This study is significant as demonstrated by the ability of the intervention program, *Happy Being Me*, to enhance the mental health and well-being of participants. This program was well received by students and schools, is brief, and easy to deliver, and thus has potential to be widely disseminated in secondary schools.

The results of this study significantly enhance the knowledge base of prevention interventions for early adolescent girls. In particular, immediate improvements were observed for a range of body image, negative affect, disordered eating, sociocultural, peer, and media related variables, and notably this study is one of few that have demonstrated sustained effects of intervention through to 12-month follow-up. The examination of mediation effects of the study also contribute significantly to our understanding of the mechanisms of action of prevention interventions. It is important to be able to understand the way in which positive change is produced to ensure that the most efficient programs are available. Efficiency is improved by ensuring that highly potent content is included in prevention programs, and ineffectual content is excluded.

Future research questions

This study has provided preliminary evidence for the value of the *Happy Being Me* intervention for early adolescent girls. However, the findings raise questions that could be addressed in future research. Given the strong impact on factors that were directly addressed in the intervention, future research could evaluate the outcomes of interventions that more directly address body dissatisfaction, using a cognitive behavioural therapy approach. Findings also showed long term improvements in depressive symptoms and self-esteem. Future research may investigate whether these improvements would be strengthened by the inclusion of a module that focused on negative affect. In addition, the immediate benefits for some factors, such as body dissatisfaction were not sustained over the long term. Research could examine the benefits of “booster” lessons scheduled intermittently across the follow-up period in sustaining these short term changes.

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