What works in secondary schools? A systematic review of classroom-based body image programs

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Abstract

Governments, schools, and curriculum authorities are increasingly recognizing that body image during adolescence is a public health issue that warrants attention in the school setting. After 30 years of eating disorder prevention research, and given the current interest in this area, it seems timely to review the research on interventions to improve body image in schools. We reviewed universal-selective, classroom-based programs that have been conducted since the year 2000, among adolescents, and found 16 eligible intervention programs. Seven of these programs were effective in improving body image on at least one measure, from pre to post test, though effect sizes were small (d = 0.22-0.48). These effective programs were conducted among younger adolescents 12.33-13.62 years, and included activities focusing on media literacy, self esteem, and the influence of peers. Implications for school personnel and curriculum authorities are discussed, and we provide recommendations for a strategic approach to future research in this area.

Keywords: body image, schools, intervention, prevention, adolescents

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Body dissatisfaction is common during adolescence. Approximately 70% of adolescent girls and 45% of boys want to change their body weight or shape (Smolak, 2012). Australian adolescents have consistently ranked body image as their number one concern in the Mission Australia Survey over the past six years (Mission Australia, 2006, 2012). Similarly, levels of body dissatisfaction among adolescent girls in the USA have remained relatively stable since 1999 (Neumark-Sztainer et al., 2012). Body dissatisfaction during adolescence has been associated with a number of negative health outcomes in prospective studies, most notably the onset of dieting and disordered eating behaviors (Neumark-Sztainer, Paxton, Hannan, Haines, & Story, 2006). Higher levels of body dissatisfaction have also been linked to depression (Stice, Hayward, Cameron, Killen, & Taylor, 2000), smoking (Neumark-Sztainer, Paxton, et al., 2006), and unsafe sex practices (Schooler, 2012), with effect sizes ranging from small to moderate. The large number of young people affected, the relative stability of this issue over the past decade, and the wide range of deleterious consequences, indicate an urgent and continuing need to develop and evaluate effective body image interventions for adolescent girls and boys.

School-based Body Image Interventions

Schools are widely recognized as appropriate sites for interventions to improve body image among adolescents. They offer the potential for sustained interactions with young people at a developmentally appropriate age, where they are already in a learning environment (Levine & Smolak, 2006). School-based interventions also offer opportunities to support program materials with environmental changes (Neumark-Sztainer, Levine, et al., 2006), and a whole-school approach to health promotion (O'Dea & Maloney, 2000; Smolak, Levine, & Schermer, 1998), particularly with younger children in more comprehensive

programs (McVey, Tweed, & Blackmore, 2007).

Governments, schools, and curriculum authorities are also increasingly recognizing the potential to address body image issues in the school setting. A recent British parliamentary inquiry recommended that evidence-based body image lessons be made mandatory in primary and secondary school curricula (All Party Parliamentary Group on Body Image, 2012). However, many secondary school teachers report that they do not feel confident in selecting and delivering appropriate body image content, and they request more effective resources and training (Ricciardelli et al., 2010). Given the current interest in school-based body image interventions from teachers and policy makers, it seems timely to review the effectiveness of interventions designed to improve body image in the secondary school classroom, in order to inform future curriculum and program design.

Rationale for This Review

School-based programs designed to prevent eating disorders have been implemented since the 1980s (Neumark-Sztainer, Levine, et al., 2006). Many of these programs did include measures of, and content about, body image as a risk factor for disordered eating, but few programs specifically focused on body image as a primary outcome. Of seven systematic reviews on interventions to date, the majority have focused on eating disorder prevention, and none have concentrated specifically on body image and body dissatisfaction (Austin, 2000; Huon, Braganza, Brown, Ritchie, & Roncolato, 1998; NEDC, 2010; Neumark-Sztainer, 1996; Pratt & Woolfenden, 2004; Wilksch & Wade, 2009b). A separate minority of review papers have addressed the prevention of both body dissatisfaction and eating disorders (Holt & Ricciardelli, 2008; Levine & Smolak, 2006; Littleton & Ollendick, 2003; Neumark-Sztainer, Levine, et al., 2006). Although useful, these reviews still focus on eating attitudes and behavior change as primary outcomes of prevention, and none focused specifically on interventions in the school setting. One thorough review did focus specifically on body

image, but not on schools. It was also conducted a decade ago and was not published in an academic journal (Paxton, 2002). Although the three meta-analytic reviews (Fingeret, Warren, Cepeda-Benito, & Gleaves, 2006; Stice & Shaw, 2004; Stice, Shaw, & Marti, 2007) do consider outcomes for body dissatisfaction, none provide evidence of effectiveness specific to school settings. Three review papers have specifically focused on interventions delivered in schools, but these have not focused on body image, and instead examined nutrition education (Story & Neumark Sztainer, 1996), eating disorder prevention (Rosenvinge & Borreson, 1999), and the combined prevention of body image and eating problems (O'Dea, 2005). Consequently, previous reviews are limited in their ability to provide clear guidance for teachers and curriculum authorities regarding the specific approaches and programs that will be effective in promoting body image in the classroom.

Levine and Smolak (2006) identify the need for ecological programs as one of their guiding principles for the prevention of eating problems. School-based programs should ultimately utilize an ecological approach that includes modifications to the school environment, school policy, and the inclusion of parents (Levine & Smolak, 2006; O'Dea & Maloney, 2000). However, the curricular component is also an important aspect of a Health Promoting Schools approach. The classroom setting is unique and requires a different approach to community, or even after school, settings for prevention programs with adolescents. Programs and lessons must be presented in a way that utilizes the existing class dynamics, and conform to limitations of time and class structure. Universal class groups are different from targeted, self-selected groups in terms of the levels of motivation for change, and therefore the types of content chosen require careful consideration. Teacher expertise in this area also needs to be considered if they are to deliver lessons and programs. The content and focus cannot be as clinical and personal in nature as class sizes do not allow for private and focused discussions, and teachers do not have sufficient training to conduct such

interventions. In summary, it cannot be assumed that the body image programs that are effective elsewhere are also going to be effective within the classroom setting; and it is important to determine the content of effective classroom-based body image lessons in order to facilitate broader ecological approaches to prevention.

Although reviews to date have been useful in identifying effective programs targeting eating behaviors and pathology, in a range of prevention settings, they are not able to provide a clear picture of the interventions that are most effective in improving body image in the classroom. As a result, it is difficult to respond to teachers, schools, policy makers and governments about 'what works' in this unique setting.

Current Review

The aim of this paper is to address this identified gap in the literature through a systematic review of studies evaluating body image programs that have been conducted with secondary school students in the classroom environment. We aim to assess the effectiveness of these interventions in improving body image (our primary outcome), among adolescent girls and boys, at post-test (T1-T2), and at follow-up (T1-T3). In addition, we examine their effectiveness in improving modifiable factors related to body dissatisfaction during adolescence (our secondary outcomes), from pre to post test. More specifically, these secondary outcomes refer to psychological (i.e., self-esteem, negative affect, internalization of appearance ideals) and socio-cultural (pressure to be thin, appearance comparison, and appearance teasing) risk factors. The impact of programs on eating pathology (drive for thinness, body change strategies, and disordered eating) was also considered. These factors have been associated with body dissatisfaction during adolescence in prior research (e.g., Jones, 2004).

In this review, 'body image' is used as an umbrella term to include thoughts, feelings, and behaviors related to physical appearance (Cash, 2004); while 'body dissatisfaction' is

used to refer specifically to the evaluative component of body image. Clarity of these terms is important, particularly for the comparison of findings on measures of these constructs (Thompson, 2004).

Method

Procedures for Identification of Studies Included in the Review

This systematic review was conducted in accordance with the procedures outlined in the Cochrane Handbook for Systematic Reviews of Interventions (Higgins & Green, 2009). Two researchers (the first and third authors) independently searched electronic databases [EBSCOHOST, Medline, PsycINFO, Current Contents, Google Scholar] using the following keywords: "body image", "body dissatisfaction", "disordered eating", "eating disorder", "interventions", "prevention programs", and "school-based". In addition, the 2008-2012 issues of the journals *Body Image, International Journal of Eating Disorders*, and *Eating Disorders: The Journal of Treatment and Prevention* were searched manually for relevant articles. Finally, all previous review papers (i.e., systematic and unsystematic reviews, and meta-analyses identified during the database searches) were scanned for additional published articles. Book chapters and theses were not included in this systematic review as their peer review status is not always reported and they are often not readily accessible. Each article was read in full to determine whether it fit the inclusion criteria for the review, and two of the authors met to agree on the inclusion or exclusion of each study.

Inclusion Criteria

We used a strict set of inclusion criteria in order to meet our specific aims of identifying effective classroom-based body image programs, and to facilitate stronger comparisons between the programs that were identified. The inclusion criteria, and justification and explanation for each are provided below.

(1) Studies were included if published as peer-reviewed journal articles, post-2000, in

order to provide a current review of rigorous research.

(2) In order to provide a review of secondary school programs, we included studies where the mean age of participants was reported as being older than 12.0 years. Students enter secondary school at a range of ages around the world, but 12 is the usual age by which they have done so in Western countries. We used the mean age of the participants as reported by the authors of the studies in order to create a clear cut-off point for study inclusion, as age range was not always provided. Although programs involving participants with a mean age of less than 12 were excluded in this instance, a future review is planned to examine the evidence base for primary schools. The upper age limit was determined by the maximum age at which participants would still be in secondary schools, which is generally 18 years.

(3) In order to meet our aims of determining effective classroom-based approaches, we only included studies where program materials were delivered in a classroom, face-to-face setting during school hours (but programs could include homework tasks).

(4) Similarly, we included only universal-selective intervention programs (but not indicated or targeted) in this review as these are most feasible for future inclusion in classroom settings. Therefore programs aimed at either co-ed groups or males and females separately were included in this review. We used Wiesz and colleagues (2005) updated definitions of the levels of prevention that were proposed by the Institute of Medicine (Mrazek & Haggerty, 1994). Universal preventive interventions are defined as those that are "for general population groups not identified as having specific risk factors" (p. 631) and selective prevention is defined as "a strategy that targets groups who are identified because they share a significant risk factor" (p. 632) (Weisz, Sandler, Durlak, & Anton, 2005). Indicated preventive interventions are targeted to high-risk individuals who are identified as having "significant symptoms of disorder" (p. 632), and were excluded from this review, as

they are generally not feasible in the classroom setting. Examples of targeted programs that were excluded from these analyses are presented in Table 2.

(5) In order to determine the effectiveness of programs for our primary outcome of body image or body dissatisfaction, programs were included in this review only if they used, and reported the results of, at least one measure of body image or body dissatisfaction that has been validated with adolescents (as reported by the authors of the evaluation) at pre and post test.

(6) Finally, we included a methodological requirement that studies were controlled. This meant that the intervention groups were compared to a comparison condition that might have been a wait-list control, engaged in an alternative intervention, or usual classroom activities. Random allocation was not required as this is sometimes not practical in the school setting.

All studies that met the inclusion criteria are summarized in Table 1. Studies were firstly categorised into three sections based on whether there were statistically significant improvements on body image measures, from pre to post-intervention. Within these sections, studies were listed in reverse chronological order, with more recent studies listed first. When two studies were published in the same year they were presented in alphabetical order. To ensure that the information summarized in this table was accurate, two of the authors (the first and second authors) independently checked and reviewed the table. Table 2 presents the reasons for excluding studies that were identified in the search strategy. These studies evaluated school-based body image programs with adolescents aged 12 and over, but did not meet the inclusion criteria for a variety of reasons as indicated in this table.

Procedure for Interpretation of Program Results and Effectiveness

Programs were first classified into three categories of effectiveness based on the significance of change on the primary outcome of body image or body dissatisfaction at post-

test. The first category, "Evidence of significant improvements on measures of body image or body dissatisfaction", identifies programs that found significant improvements on at least one measure for the primary outcome, over time, relative to the comparison group. The second category, "Evidence of improving factors related to body image but no significant improvement on measures of body image", identifies programs that did not demonstrate significant improvements on measures of body image, but were shown to significantly improve at least one of the secondary outcomes, that is other factors related to body image (including self-esteem [SE], negative affect [NA], internalization of cultural beauty ideals [IN], perceived pressure to be thin [P], appearance comparisons [Cm], appearance-related teasing [T], drive for thinness [DT], and body change strategies and disordered eating [D]) over time, relative to a control group. Although appearance conversations have been identified as a potential factor related to body dissatisfaction, they were only measured in one of the program evaluations (Richardson & Paxton, 2010), and are therefore not depicted in the table. The final category, "No evidence of improving body image or factors related to body image", identifies programs that did not demonstrate significant improvements in body image, or related factors, over time, relative to a control group.

For each of the outcomes, intervention programs were classified as having achieved significant improvements (represented by 'Y') if the analyses indicated that the intervention group improved on scores of the primary or secondary outcome measures from pre to post test, relative to the control group ($p<.05$). The same procedure was used to determine whether programs achieved, or maintained, significant improvements on the primary outcome measure of body image at follow-up (T1-T3). Where change was significant, and when adequate information (means and standard deviations) was provided by the authors, effect sizes (Cohen's *d*) were calculated by inputting the means and standard deviations as reported by the study authors into an online calculator (L. Becker, 1998), except for the one

paper where we used Cohen's *d* as provided by the authors (Wilksch & Wade, 2009a). Cohen's classifications of effect size as small (0.2), medium (0.50) and large (0.80) was used (Cohen, 1988).

Given the wide range of existing measures of body image (J. K. Thompson, 2004; Yanover & Thompson, 2009), we indicated the measure used to determine the results for each construct using a superscript, and provide details of each measure in Table 3. For programs that included girls and boys, the results are presented separately for each gender. There were two studies where this was not possible as the authors did not report all analyses separated by gender (O'Dea & Abraham, 2000; Wade, Davidson, & O'Dea, 2003). When analyses were conducted on the full sample and sub-samples of participants according to risk (i.e., low and high), we report only the results for the full sample, as this is represents regular classroom dynamics. In one paper, analyses were only reported for low and high-risk sub-samples, so we report the results for both samples (Wilksch, Durbridge, & Wade, 2008). Finally, in one study, separate analyses were reported only for cohorts of participants from the USA and Italy and so we report these findings separately (Wiseman et al., 2004).

Classification Procedure for Intervention Approach and Program Details

The name of each program, study authors, and country in which the study was conducted were obtained from the published reports. Where no program name was provided, this is represented by 'untitled' in Table 1. The approach of each intervention program was classified into 10 sub-types by the review authors, based upon the information provided in the published studies. Prior reviews (e.g., Holt & Ricciardelli, 2008; Stice & Shaw, 2004) have classified body image and eating disorder prevention programs into six subtypes: psycho-education [Psy]; self-esteem enhancement skills [SE]; healthy weight-control skills [HW]; stress and coping skills [stress]; body acceptance skills [BA]; and socio-cultural resistance skills (including peers, media literacy, and cognitive dissonance). We also used these sub-

types in our classification procedure, but made some modifications. We added one category that focussed on developmental factors [dev] such as discussions about pubertal weight gain, as this content was not covered by the other categories. For clarity, we separately identified the three socio-cultural resistance skill approaches as approaches aimed at reducing the impact of peers [peer], enhancing media literacy [ML], and programs that used a cognitive dissonance approach [CD]. We also classified psycho-education (providing information about psychological concepts) for body image [PsyBI] and eating disorders separately [PsyED]. Details of the professional background and gender of the facilitator were obtained from the methods, as were the number and length of sessions to determine the dose. The mean age of participants was obtained from the studies, or a range was used if a mean was not provided. Participant numbers were determined by adding the number of participants in the control and intervention conditions, as reported by the study authors, for males and females separately.

To ensure correct interpretation and classification of the results of each study, the corresponding study authors of the articles included in Table 1 were emailed a copy of the original table (without effect sizes) and method section of this paper prior to submission for publication. We received confirmation of results from 73% of the authors (n = 11). Minor details regarding sample sizes and the gender of facilitators were changed according to recommendations from the study authors.

Results

Summary of Intervention Effects

We found 16 studies published in 15 separate papers (one paper compared two programs) that met the inclusion criteria. These papers evaluated 15 separate programs (one paper was a replication of a previous program). Of these, 43% (n = 7) of programs showed a significant improvement on at least one measure of body image or body dissatisfaction from

pre to post-intervention, and will henceforth be referred to as 'Effective Programs'. Effect sizes for significant improvements in body image or body dissatisfaction ranged from 0.23-0.48, and were all categorized as small effects according to Cohen (1988). Three programs (18% of all reviewed) were effective in improving body image or body dissatisfaction on at least one measure at 3-month (Richardson & Paxton, 2010), 6-month (Wilksch & Wade, 2009a), and 30-month (Wilksch & Wade, 2009a) follow-up. Overall the strongest effect sizes were found on measures of participant knowledge from pre to post test, with all effect sizes for knowledge classified as large effects, and ranging from 0.73 to 1.63.

Table 1: *Review of studies that evaluate universal-selective, classroom-based body image programs in secondary schools*

Program	Approach	Fac	Dose		Participants			Primary	Secondary Outcomes									T1-T3
									Psych.		Sociocultural				Eating		Know.	
			#	mins	Age	*N*	Sex	BD/BI	SE	NA	IN	P	Cm	T	DT	D	K	Change BD/BI
								1	2	3	4	5	6	7	8	9	10	(months)
Evidence of significant improvements on measures of body image and body dissatisfaction																		
Happy Being Me (Richardson & Paxton, 2010) Aus	Peer, ML	R-F	3	50	12.33	194	F	Y(0.30)[a](0.37)[b]	Y(0.44)[a]	-	Y(0.22)[a]	-	Y(0.28)[a]	N[a]	-	Y(0.44)[a]N[b]	Y(1.27)	Y(0.47)[a],Y(0.58)[b](3)
Dove BodyThink (Richardson et al., 2009) Aus	PsyBI, SE, BA, Peer, ML	R-F	4	50	12.66	127	F	N[a,b]	Y(0.36)[b]	-	Y(0.44)[a]	-	Y(0.44)[a]	N[a]	-	N[a,b]	Y(0.73)	N[a,b] (3)
						150	M	Y(0.48)[b] N[c]	N[b]	-	N[b]	-	N[a]	N[a]	-	N[a,b]	Y(0.74)	Y(0.48)[b] N[c] (3)
Media Smart (Wilksch & Wade, 2009a) Aus	ML	R-M	8	50	13.62	273	F	N[a,d,e]	N[a]	N[a]	N[a]	N[a]	-	-	-	N[c]	-	N[a] Y(0.27)[d,e](30)
						267	M	Y(0.22)[a] N[d,e]	N[a]	N[a]	N[a]	N[a]	-	-	-	Y(0.28)[c]	-	Y(0.21)[a] Y(0.25)[d,e](6)
Untitled (Stanford & McCabe, 2005) Aus	SE, BA, Dev, ML	-	2	60	12.34	121	M	Y(0.29)[j] N[k]	N[b]	N[b]	-	-	-	-	N[a]	N[b,d]	-	N(1,3)
Adapted Go Girls! (Wade et al., 2003) Aus [1]	PsyBI, ML	T-M	5	50	13.42	43	M/F	Y[e](-)N[f,d]	N[c]	-	-	-	-	-	-	N[a]	-	N(3)
Untitled (Stewart et al., 2001) UK [2]	Peer, SE, BA, Stress, Dev,	R-F	6	45	13.40	860	F	Y(0.23)[d]N (1.8)[e]	N(0.12)[d]	-	-	-	-	-	-	Y(0.22)[a] N(0.32)[e]	Y(1.63)	N(0.11)[d] N(0.05)[e] (3)
Everybody's Different (O'Dea & Abraham, 2000) Aus[3]	SE, Stress, ML	T-M/F	9	50-80	13.00	470	M/F	N[a] Y(0.28)[i fem]	N[e]	N[a,c]	-	-	-	-	Y(0.09)[a]	N[b,f]	-	N (12)
Evidence of significant improvements on likely factors related to body image but no significant improvement on measures of body image																		
Making Choices (Weiss & Wertheim, 2005) Aus [4]	PsyED, SE, HW, BA, Peer,	R-F	4	100	14-16	173	F	N[a,f]	N[a]	-	-	N[b]	-	-	N[a]	Y(-)[b]N[g]	-	N(3)
Student Bodies (Bruning Brown et al., 2004) USA[5]	PsyBI/ED, HW, BA	O/L	8	60	15.10	152	F	N[d,e]	-	-	-	-	-	-	N[a]	Y(0.28)[a] N[b,h]	Y(0.92)	N(3)
Untitled (Wiseman et al., 2004) USA/Italy[6]	PsyBI/ED, SE, HW	R-F	6	-	15-16	188	F[Italy]	N[a]	N[a]	-	-	-	-	-	Y(0.50)[a]	N[b,i]	-	-
							F[USA]	N[a]	N[a]	-	-	-	-	-	N[a]	N[b,i]	-	-
Full of Ourselves (Steiner-Adair et al., 2002) USA	SE, HW, BA, Dev, ML	S	8	45-90	12.59	411	F	N[g] N[h]	N[a]	N[a]	-	-	-	-	-	N[f]	Y(1.18)	N(3)
Untitled (Withers et al., 2002) Aus[7]	PsyED, HW, Dev	V	1	22	13.00	242	F	N[a,l]	-	-	-	-	-	-	Y(0.22)[a]	Y(0.25)[f]	Y(1.09)	N(1)
Untitled (Rocco et al., 2001) Italy	PsyED, Dev	R-F	9	180	16.07	112	F	N[a]	-	N[d]	-	-	-	-	N[a]	Y(0.11)[b]	-	-
No evidence of significant improvements on body image or likely factors related to body image																		
Healthy Body Image (McCabe et al., 2010) Aus	Stress, Peer	R-F	5	60	12.96	421	M	N[k]	N[b]	N[b]	-	N[c]	-	-	N[a]	N[d]	-	N(3,6,12)
Media Literacy Program (Wilksch et al., 2008) Aus [8]	Peer, ML	R-M/F	8	50	15.00	20	F[6 Hi]	N[d,e]	N[a]	-	N[a]	N[a]	-	-	-	N[c]	-	N(3)
						67	F[6 Lo]	N[d,e]	N[a]	-	N[a]	N[a]	-	-	-	N[c]	-	N(3)
Everybody's Different (Replic:Wade et al., 2003) Aus	SE, Stress, ML	T-M	5	50	13.42	61	M/F	N[d,e,f]	N[c]	-	-	-	-	-	-	N[a]	-	N(3)

Key:

- Approach: PsyBI= Psychoeducation about body image; PsyED= Psychoeducation about eating disorders; SE= Self Esteem; HW= Healthy Weight; BA= Body Acceptance; Stress = Stress and coping skills; Dev= Developmental approach; Peer = Peer Sociocultural skills; ML = Media Literacy Sociocultural skills; CD= Cognitive Dissonance Sociocultural skills.
- Facilitator: Details of the person who delivered the program (R = Researcher, T = Teacher, S = School Staff) and their gender (M/F),(-) used where details not provided, O/L = online and V = Video
- Dose: Presented according to the number of sessions (#) and the length of each session in minutes;
- Participants: Mean age, and number of participants are given, and a description of the sex- also includes risk status or country.
- Results: Improvements in constructs were represented according to Y/N (Y = Yes, N = No); If Y, effect sizes are provided in brackets (Cohen's *d*). Details of the measures used are given in superscript (e.g., [a, b]) and provided in Table 3. Improvements at follow-up (T1-T3) were indicated using Y/N, effect sizes if significant, and the number of months at which this was measured.
- Outcomes: BD/BI = Body Image and/or Body Dissatisfaction; SE = Self Esteem; NA= Negative Affect; IN = Internalization; P = Pressure to be Thin; Cm = Appearance Comparisons; T = Appearance –Related Teasing; DT = Drive for Thinness; D = Body Change Strategies and Disordered eating; K = Knowledge.

Notes

- [1] Pre and post means and standard deviations were not presented so effect sizes could not be calculated.
- [2]Tests of significance were not provided for pre/post comparisons so effect sizes are provided for all analyses
- [3] Results for this table were taken from analyses of group interaction effects for the group as a whole, not the analyses of effects among high risk students. Effects for the measure of body image were presented as being significant for females
- [4] Authors did not present means and standard deviations so no effect sizes could be calculated.
- [5]This was a program delivered online, but in the classroom setting and moderated by research assistants.
- [6] This program was conducted in co-educational classes of males and females, but questionnaires and evaluation were only conducted with the females
- [7] This program was a 22- minute videotape
- [8] Analyses were only given for high and low risk groups separately, and not the combined universal sample, but no significant change for either groups on the factors was reported

Table 2

Excluded studies and rationale for exclusion

Exclusion Rationale	Studies and Programs
Programs recruited students from the school setting but did not conduct intervention in the classroom and were targeted (not universal or selective)	▪ My Body My Life- targeted program delivered online in synchronous internet sessions (Heinicke, Paxton, McLean, & Wertheim, 2007) ▪ The Body Project – Targeted program for high risk girls (Rodriguez, Marchland, Ng, & Stice, 2008; Stice, Marti, Spoor, Presnell, & Shaw, 2008; Stice, Presnell, Gau, & Shaw, 2007; Stice, Rohde, Gau, & Shaw, 2009; Stice, Shaw, Burton, & Wade, 2006; Stice, Trost, & Chase, 2003) ▪ Student Bodies- Combined Universal and Targeted (Abascal, Bruning Brown, Winzelberg, Dev, & Taylor, 2004)
Programs were conducted in schools but not in the regular classroom curriculum setting	▪ Girl's circle -Peer support program (Steese et al., 2006) ▪ Peer support Program based on GoGirls! Curriculum (C. Thompson, Russell-Mayhew, & Saraceni, 2012) ▪ Girl Talk/ Everybody is a Somebody- Conducted in peer support groups- (McVey, Lieberman, Voorberg, Wardrope, & Blackmore, 2003; McVey, Lieberman, Voorberg, Wardrope, Blackmore, et al., 2003) ▪ Teacher –led program- conducted outside of class time and did not measure body image or body dissatisfaction (Favaro, Zanetti, Huon, & Santonastaso, 2005) ▪ New Moves School Intervention- Included physical education classes and individual counseling sessions that were beyond the regular universal classroom intervention (Neumark-Sztainer et al., 2010) ▪ Dance curriculum- Measured body image but intervention was not classroom based (Burgess, Grogan, & Burwitz, 2006)
Programs were conducted in the school setting but did not measure body image or body dissatisfaction	▪ New Moves School Intervention- first paper did not indicate measurement of body image (Neumark-Sztainer, Story, Hannan, & Rex, 2003) ▪ Planet Health program component of the 5-2-1 Go! Study (Austin, Field, Wiccha, Peterson, & Gortmaker, 2005; Austin et al., 2007) ▪ Wellness program (Russell-Mayhew, Arthur, & Ewashen, 2007) ▪ Spanish Media Literacy Program (Gonzalez, Penelo, & Gutierrez, 2011; Lopez-Guimera, Sanchez-Carracedo, Fauquet, Portell, & Raich, 2011; Raich, Portell, & Pelaez-Fernandez, 2010) ▪ Croatian version of an Italian eating disorder prevention program (Pokrajac-Bulian, Zivcic-Becrirevic, Calugi, & Dalle Grave, 2006)
Programs measured body image or body dissatisfaction, but did not report statistics of change on this construct	▪ Body Logic- Did not report results on measure of body image (Varnado-Sullivan & Zucker, 2004; Varnado-Sullivan et al., 2001) ▪ Examined effect of intervention on SATAQ scores rather than presenting change on scales from T1-T2 (Wilksch, Tiggemann, & Wade, 2006) ▪ Eating disorder prevention program- gave summaries of statistics in text but did not report specific statistical evidence sufficient for use in this review (Phelps, Sapia, Nathanson, & Nelson, 2000)
Programs did not meet methodological criteria	▪ No control group (Abascal et al., 2004; Heinze, Wertheim, & Kashima, 2000; Steese et al., 2006; C. Thompson et al., 2012)

Participant Characteristics

Gender. In total, nine studies were conducted and evaluated with girls, five included both boys and girls, and two were conducted among boys only. Among programs conducted with girls only, *Happy Being Me* (Richardson & Paxton, 2010) was found to be the most effective intervention. This program was the only one to demonstrate significant improvements in body image at post-test (d = 0.30-0.38, small) and 3-month follow-up (d= 0.47-0.58, small/medium). Girls who received *Happy Being Me* also had small, but significant improvements on the majority of other factors related to body image, including self-esteem, internalization, appearance comparisons, and disordered eating attitudes.

Among boys, *Media Smart* (Wilksch & Wade, 2009a) was the most promising as it was the only program to report significant improvements in body image at post-test (d= 0.22, small) that were sustained at 6-month follow-up (d = 0.21-0.25, small). Additionally, *Media Smart* also improved restrained eating among boys at post test (d = 0.28, small). It was interesting to note that when studies were conducted in a mixed-gender setting, body image was only improved among boys e.g., *BodyThink* and *Media Smart* (Richardson, Paxton, & Thomson, 2009; Wilksch & Wade, 2009a). However, of the two programs that were specifically designed for, and conducted with boys (McCabe, Ricciardelli, & Karantzas, 2010; Stanford & McCabe, 2005), only one was successful in improving satisfaction with muscles, self-esteem, and negative affect (Stanford & McCabe, 2005).

Age. All seven programs that were identified as being effective in improving body image from pre- to post-test were conducted with younger participants. The mean age ranged from 12.33-13.62 years in Effective Programs. None of the five programs that targeted participants aged 14-16 years were effective in improving body image, but some achieved improvements on drive for thinness (Wiseman, Sunday, Borlotti, & Halmi, 2004), or eating attitudes and behavior (Bruning Brown, Winzelburg, Abascal, & Barr Taylor, 2004; Rocco,

Ciano, & Balestrieri, 2001; Weiss & Wertheim, 2005). No programs that met inclusion criteria were conducted with older adolescents with a mean age above 16 years.

Risk status. Given our focus on universal and selective interventions, 75% (*n* = 12) of the studies that met inclusion criteria did not investigate the impact of the program according to participant's initial baseline measures, and subsequent risk status. The majority of the programs that conducted separate analyses of the effects of their program among high and low risk groups reported greater improvements in body image and other secondary factors with high-risk groups (McCabe et al., 2010; O'Dea & Abraham, 2000; Weiss & Wertheim, 2005) while one did not (Wilksch et al., 2008).

Intervention Program Characteristics

Content. All interventions utilized a combination of approaches and content. The most common approach used by the seven Effective Programs was media literacy, used by 86% (*n* = 6) of programs. Information and activities that aimed to improve self-esteem (used by 57%, *n* = 4 programs) and discussed peer influence (used by 43%, *n* = 3 programs) were other common inclusions in Effective Programs. The majority of Effective Programs did not include psycho-education about body image (71%, *n* = 5), and none included psycho-education about eating disorders. In contrast, of the six programs that reported significant improvements on secondary outcome measures, but not body image, the majority included psycho-education about eating disorders (83%, *n* = 5), information about maintaining a healthy weight (67%, *n* = 4), self esteem (50%, *n* = 3), and pubertal development (50%, *n* = 3).

Length. Programs in this review ranged in length from 22 minutes to 27 hours. Effective Programs were all multi-session and ranged from 150-720 minutes (2.50- 12 hours) in total program length. The average length of time for Effective Programs was 5.02 hours. Programs that were longer did not necessarily achieve greater program effect sizes on the

primary outcome of body image.

Pedagogy. Of all programs that met inclusion criteria, most (87%, *n* = 14) were interactive, and included the provision of information as well as small group activities and discussion. The two programs that were didactic in nature included the video intervention (Withers, Twigg, Wertheim, & Paxton, 2002) and a program evaluated in Italy (Wiseman et al., 2004). Neither of these found significant improvements in body image, but both achieved small to medium reductions in drive for thinness. In terms of audio visual formats, the two programs that utilised video and online delivery were not successful in improving body image, but did have small effects on dieting and disordered eating pathology (Bruning Brown et al., 2004; Withers et al., 2002).

Presenter Characteristics

Professional role. Out of the total 16 programs reviewed, nine (56%) were implemented by researchers who were external to the school where the study took place. Four programs (25%) were implemented by professionals within the school, including teachers, school nurses or school counselors. One study was conducted in computer labs through online software (Bruning-Brown et al., 2004), and one was presented in video format (Withers et al., 2002). Finally, one paper did not include details of the characteristics of the person who delivered the program (Stanford & McCabe, 2005). The majority of Effective Programs were facilitated by researchers (57%, *n* = 4).

Presenter gender. Many of the programs were facilitated by women (43%, *n* = 7). Three programs (two by teachers, one by a researcher) were presented by men, and two programs were delivered by a combination of men and women. It was interesting to note that the one program that was delivered by a male researcher was successful in improving body image among boys in a mixed-sex class (Wilksch & Wade, 2009a). One of the programs delivered by a male teacher (Adapted *Go Girls* program) improved body image; while the

replication of the *Everybody's Different* program evaluated in the same study, and implemented by male teachers did not improve body image (Wade et al., 2003).

Outcome Measures Used in Evaluations

Table 3 demonstrates the wide range of measures (12 in total) that were used to assess changes in body image and body dissatisfaction in the included studies. The Body Dissatisfaction subscale of the Eating Disorders Inventory (Garner, Olmstead, & Polivy, 1983) and the Shape and Weight Concern subscales of the Eating Disorders Examination Questionnaire (Fairburn & Cooper, 1993) were the two most commonly used measures of body image and body dissatisfaction. Most studies used more than one measure of body image and included at least one of these two popular measures. The studies that evaluated Effective Programs also tended to use these two measures and improvements were also found on Body Satisfaction Visual Analogue Scales (Durkin & Paxton, 2002) and the Satisfaction with Muscles subscale of the Body Satisfaction and Body Change Inventory (Ricciardelli & McCabe, 2002). All measures were validated for use with adolescents, though no studies have investigated the validity and reliability of the Shape and Weight subscales of the self report version of the EDE-Q with universal populations of adolescent boys and girls.

Table 3

Details of the measures used to determine change on body image and factors related to body image

Construct	Measure
1. Body Image or Body Dissatisfaction [BI/BD]	[1a] Body Dissatisfaction Subscale of Eating Disorders Inventory [EDI] (Garner et al., 1983) [1b] Body Satisfaction Visual Analogue Scale [BSVAS] (Durkin & Paxton, 2002) [1c] Adapted version of the Body Dissatisfaction Subscale of the EDI that is modified to represent the common areas of male body dissatisfaction (Jones, 2004) [1d] Shape Concerns subscale of the Eating Disorder Examination [EDE] (Fairburn & Cooper, 1993) [1e] Weight Concerns subscale of the Eating Disorder Examination [EDE] (Fairburn & Cooper, 1993) [1f] Stunkard Figure rating scale- discrepancy score (Stunkard, Sorenson, & Schulsinger, 1983) [1g] Weight Subscale of the Body Esteem Scale [BES] for adolescents and young adults (Mendelson, Mendelson, & White, 2001) [1h] Body Areas Satisfaction Scale [BASS] of Multidimensional Body Self Relations Questionnaire [MBSRQ] (Cash, 2000) [1i] 'Self' Physical Appearance Ratings [PAR] (O'Dea, Abraham, & Heard, 1996) [1j] Satisfaction with muscles subscale of the Body Satisfaction Subscale of the Body Satisfaction and Body Change Inventory [BS&BCI] (Ricciardelli & McCabe, 2002) [1k] Satisfaction with weight Subscale of the Body Satisfaction and Body Change Inventory [BS&BCI] (Ricciardelli & McCabe, 2002) [1l] Size discrepancy on the Contour Drawing Rating Scale (J. K. Thompson & Gray, 1995)
2. Self Esteem [SE]	[2a] Rosenberg Self Esteem Scale (Rosenberg, 1965) [2b] General Scale of the Marsh Self –Description Questionnaire II (Marsh, 1992) [2c] Self worth or Global Self Esteem Score from the Self Perception Profile for Adolescents (Messer & Harter, 1986) [2d] Piers-Harris Children's Self Concept Scale (Piers, 1965) [2e] Other subscales of the Self Perception profile for Adolescents (Messer & Harter, 1986)
3. Negative Affect [NA]	[3a] Children's Depression Inventory- Short form [CDI] (Beck, Ward, Mendelson, Mock, & Erbaugh, 1961; Kovacs, 1992) [3b] Depression Anxiety Stress Scales- Short version [DASS] (Lovibond & Lovibond, 1995) [3c] State-Trait Anxiety Inventory (Junior) (Speilberger, Gorsuch, & Lushene, 1970) [3d] Anxiety subscale of the Personality Factors-16 Questionnaire [PF-16] (Cattel & Gibbons, 1968)
4. Internalization [IN]	[4a] Internalization subscale of the Sociocultural Attitudes Towards Appearance Questionnaire [SATAQ] (Heinberg, Thompson, & Stormer, 1995) [4b] Modified SATAQ for the muscular ideal (Smolak, Levine, & Thompson, 2001)
5. Pressure to be thin [P]	[5a] Perceived Sociocultural Pressure Scale (Stice, Ziemba, Margolis, & Flick, 1996) [5b] Pressure for a Thin Body Scale (Dunkley, Wertheim, & Paxton, 2001)

	[5c] Media Influences Subscale from the BI & BCQ (McCabe & Ricciardelli, 2001)
6. Appearance Comparisons [Cm]	[6a] Physical Appearance Comparison Scale [PACS] (J. K. Thompson, Heinberg, & Tantleff, 1991)
7. Appearance Related Teasing [T]	[8a] Weight Teasing Subscale of the Perception of Teasing Scale (J. K. Thompson, Cattarin, Fowler, & Fisher, 1995)
8. Drive for Thinness [DT]	[9a] Drive for Thinness subscale of the Eating Disorder Inventory [EDI] (Garner et al., 1983)
9. Body change strategies and disordered eating [D]	[10a] Eating Disorders Examination [EDE] (subscales or total score) (Fairburn & Cooper, 1993) [10b] Eating Disorders Inventory [EDI] (subscales or total score) (Garner et al., 1991) [10c] Restrained Eating subscale of the Dutch Eating Behaviors Questionnaire [DEBQ] (Van Strien, Frijters, Bergers, & Defares, 1986) [10d] Strategies to Increase Muscles and Food Supplement Subscales of the Body Change Strategies Subscale of the BI & BCI (Ricciardelli & McCabe, 2002) [10e] Total score on the Eating Attitudes Test [EAT] or CHEAT (Garner & Garfinkel, 1979) [10f] Single item direct questions about dieting behaviour (Heinze et al., 2000; O'Dea et al., 1996; Steiner-Adair et al., 2002) [10g] Food Abstinence and Purging Subscales of the Weight Loss Behaviors Scale (Paxton et al., 1991) [10h] Weight Concerns Scale (Killen, Hayward, Wilson, & al, 1994) [10i] Restraint Subscale of the Three Factor Eating Questionnaire (Stunkard & Messick, 1985)
10. Knowledge	All studies used scales developed by authors

Discussion

We conducted a systematic review of classroom-based interventions delivered to adolescents in secondary schools, in order to determine which programs have been effective in improving the primary outcome of body image and other secondary factors related to body dissatisfaction. It was promising to find that seven programs were effective in improving body image immediately post-intervention, but less than 20% of all programs had sustained effects on body image at follow-up. Effective Programs tended to (a) target younger adolescents aged 12-13 years, (b) include some media literacy, self esteem and peer-focused content, but not psychoeducation, and (c) were multi-session, and an average of 5.02 hours in total program length.

The finding that Effective Programs tended to target younger adolescents, aged 12-13 years, contradicts previous eating disorder meta-analyses that have found programs to be

most effective when participants were aged over 15 years (Stice et al., 2007). However many body image researchers argue that early intervention provides the greatest opportunity to address body image concerns and appearance ideals before young people's ideas about appearance and dissatisfaction become fixed (Paxton, 2002; Smolak & Levine, 2001; Stewart, Carter, Drinkwater, Hainsworth, & Fairburn, 2001). The school setting provides an opportunity to include content to improve body image at every developmental stage. Therefore, rather than determining the 'perfect time' to intervene, future prevention efforts need to determine which approaches and content are most appropriate for each age level so that they may be included in school curricula accordingly.

We also found that Effective Programs utilized content that included media literacy, and activities to increase self esteem and relationships with peers. This does not provide definitive information about the effectiveness of these approaches, as all studies used different combinations of different types of content. No randomized controlled trials or comparative studies have been conducted in order to determine the approach to prevention that is most likely to be effective with this age group. Although Levine and Smolak (2006) tend to recommend psycho-education, we found that only two of the Effective Programs in this review included information about body image, and none included information about eating disorders. Other reviews in this field (Stice, Shaw & Marti, 2007; Yager & O'Dea, 2008) and broader areas of prevention (Larimer & Cronce, 2007) suggest that psycho-education, information, or knowledge-based approaches are not effective with adolescents and college students.

Our third major finding was that Effective Programs were only an average of five hours in length. Criticism of 'one-shot' eating disorder prevention and intervention programs (Levine & Smolak, 2006; Martz & Bazzini, 1999) with college students has led some researchers in this field to believe that 'longer is better'. This creates considerable practical

issues for school-based programs; where very few health topics are given adequate curriculum time to implement a program that is eight or nine sessions long. We suggest that future programs could be able to be limited to four or five, hour long sessions, and still be effective in changing attitudes and behavior.

We did not find any programs that were effective in improving body image for both girls and boys. Some of the programs that targeted boys (Stanford & McCabe, 2005) or girls (Richardson et al., 2010) on their own were effective in improving body image. However, in co-educational settings, improvements occurred among boys only (Richardson et al., 2009; Wilksch & Wade, 2009a). This finding is in contrast to the results of the meta-analysis where Stice and colleagues (2007) reported that eating disorder prevention programs have been most effective when delivered to female-only populations. Previous research is divided as to whether girls and boys should receive body image interventions in mixed- or single-sex settings. Separating girls and boys makes sense, as theoretically different messages are required in order to target differences in appearance ideals and developmental trajectories in relation to pubertal and social development throughout adolescence. Girls and boys may also feel embarrassed and vulnerable in front of the opposite sex when discussing this topic (Paxton, 2002). However, the majority of schools are mixed-sex and there are equally strong arguments for addressing body image in co-educational settings. Opportunities for discussion about opposite-sex peer body ideals may provide a positive and powerful influence on reducing internalization and body dissatisfaction (Austin, 2000; Wade et al., 2003). In addition, it has been argued that the opposite sex are an ever-present influence on the peer environment, so their attitudes towards socio-cultural ideals of thinness or muscularity must also change to allow improvements in the social environment (Dalle Grave, De Luca, & Campello, 2001). Nevertheless, it is evident that more research is needed to develop body image programs that are appropriate and effective for girls and boys separately,

as well as in a mixed-gender environment.

Although rigorous research procedures were used in this systematic review, there are some inherent limitations to the approach used and cautions in terms of findings reported. The major limitation was that, in order to facilitate a highly comparable sample of programs that would lead to some definitive findings, some very well respected secondary school programs had to be excluded from the analysis, for a variety of reasons. These studies may have a lot to contribute to the literature and future directions of body image research, but did not meet the specific inclusion criteria for this review. In addition, the reporting of program details and results was limited to the information provided in the initial publications, some of which was not particularly detailed. Finally, we could not incorporate improvement of body image at follow up in our criteria for Effective Programs due to the high variance in follow-up times.

Recommendations for Future Research

The results from this review will assist teachers, curriculum authorities, health professionals, and governments to identify the most effective body image programs to date. This responds to the identified needs of teachers and supports them in providing evidence-based secondary school body image programming. This review also identifies new directions for future body image research, which are outlined below.

Firstly, it is reassuring that some of the identified limitations of first generation eating disorder prevention programs have been addressed over the past decade (Austin, 2000). This includes the widespread use of interactive approaches and the inclusion of boys. However some of the earlier issues still remain, including a lack of theoretical foundations for interventions, and restricted opportunities for comparison between studies due to the wide range of measures used (Austin, 2000). The methodological restrictions of program evaluation identified more recently by Neumark-Sztainer, Levine and colleagues (2006) have

also not been resolved. For example, they suggested the need for more randomized controlled trials with larger samples to enhance statistical power. The following are several suggestions for the next generation of body image intervention programs.

First, to avoid duplicating efforts, we suggest that researchers plan a more coordinated and strategic approach to the development and evaluation of school-based body image interventions. For example, researchers could focus on independently replicating and extending on school-based programs that have already been found to be effective, instead of developing new programs and content. Similarly, it might be useful to adapt and evaluate programs that have consistently been shown to be effective outside the classroom (e.g., cognitive dissonance approaches; Stice et al., 2007) before developing entirely new content. This approach could maximise the use of limited resources and funds, and also rapidly strengthen the quality and breadth of the evidence-base for effective school-based programming.

Second, to allow for meaningful comparisons across studies and effective replication, a more coordinated and strategic approach to study design, including the selection of comparable program materials, samples, outcome measures, and follow-up times is also needed. A wide range of measures for body image are available, but to facilitate comparisons across studies researchers could work towards greater consensus on a smaller set of validated, age-appropriate scales that allow us to accurately measure body image among adolescents (Steiner-Adair et al., 2002). Researchers should aim for random assignment to condition wherever possible. Randomization of individuals to condition is unlikely to be practical in the school setting, and so whole schools or classes are allocated to control and intervention groups. Some researchers have randomly assigned to condition by class and recommend this approach (Richardson & Paxton, 2010). However this presents a risk of spillover effects, and is usually not practical from the school's perspective as there

would be disruptions to the curriculum for some but not all students. Others recommend using separate control schools, so there are no contamination concerns, but students may be demographically different (Smolak & Levine, 2001; Steiner-Adair et al., 2002). We suggest that the latter is preferable, as this can be controlled to a greater extent than the potential for young people to talk to their peers about the research (e.g., with strategies in place to match samples for demographic characteristics, or through covariate analyses).

Finally, researchers have used a wide range of follow-up times (from 1 to 30 months in this review) and this reduces our ability to draw accurate and comparative conclusions regarding ongoing program effects. We recommend, where possible, a minimum of 3-month follow-up as this was most common among studies in the current review, and consistency here would aid future comparison. Those with adequate funding and school support could aim to measure six month follow-up as well in order to observe a true preventive effect (Wilksch & Wade, 2009a) and meet the Society for Prevention Research criteria for efficacy (Flay et al., 2005). Regardless of the length of time used, researchers could begin to include some measure of 'other relevant activities' (e.g., other health lessons, or classroom content that could be related to body image) that may have occurred between post test and follow-up in control and intervention schools in order to improve clarity of causal inference. Without this thoughtful consideration and consensus with regard to study design, measures, control groups, and follow-up, the strength of the evidence-base for effective school-based body image interventions will continue to be restricted.

Our final suggestion is that, after programs have demonstrated effectiveness when delivered by a researcher with body image expertise (efficacy study), they should be trialled with delivery by school staff (effectiveness study) and prepared for broader dissemination. Although we included details of the characteristics of the presenter in this review, it was difficult to make comparisons on this aspect as no research has directly compared the impact

of the same program when delivered by presenters of different genders and/or professional backgrounds. If we are to aim for widespread dissemination of effective body image programs, the use of researchers and specialized interventionists would make program delivery expensive, labour intensive, and ultimately, not sustainable. It is therefore necessary that a structured research approach is used in order to move from efficacy studies to broader dissemination as proposed by the Society of Prevention Research, and others in the eating disorder prevention field (C. B. Becker, Ciao, & Smith, 2008; Flay, 1986; Marchland, Stice, Rohde, & Becker, 2011). Determining effective mechanisms of disseminating best practice to teachers and school staff continues to be an important barrier for this field to overcome.

Conclusions and Future Directions

In sum, we have identified several promising interventions that have demonstrated improvements in body image and associated factors among adolescents in the school setting. However, to strengthen the evidence-base for effective school-based programming there is an on-going need for more research into effective programs for mixed-sex and male populations, programs that can be effectively delivered by endogenous providers, and the replication of positive effects across studies.

Acknowledgements

This research was facilitated by fellowships awarded to the first author from Leverhulme Trust and the second author from the Vocational Training Charitable Trust. We would also like to acknowledge Nicole Paraskeva for her assistance during the early stages of this research.

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