

Improving Body Satisfaction in Preadolescent Girls and Boys: Short-Term Effects of a School-Based Program

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Abstract

Introduction. The aim of this study was to evaluate the school-based “My Body and I” program which was designed to help girls and boys to cope better with inevitable pubertal body changes.

Method. Using a pre-post treatment-control design with 25 treatment and 17 control classes from schools in Germany and France (484 boys, 485 girls; mean age: 10.5 years), changes were measured between a pretest and a posttest.

Results. Compared with the control condition, students in the treatment condition exhibited a significant increase in knowledge (effect size = 0.89), a decrease in body dissatisfaction (ES = 0.12), body shape concerns (ES = 0.11), and a shift away from the thin ideal (ES = 0.13).

Discussion and Conclusion. The findings suggest that “My Body and I” is an effective primary prevention program reducing the risk for body dissatisfaction among 4th and 5th graders.

Keywords: prevention, elementary school, body dissatisfaction, body image, risk factors

Resumen

Introducción. El objetivo de esta investigación ha sido evaluar el programa de prevención escolar *Mi cuerpo y yo*. El programa fue desarrollado para que los niños y niñas fueran mejor preparados de cara a los cambios inevitables de la pubertad.

Método. Para este estudio se empleó un modelo de grupo experimental y grupo control en colegios de Alemania y Francia; hubo 25 clases experimentales y 17 clases de control (484 niños y 485 niñas; edad media de 10,5 años); se midieron los cambios entre pretest y postest.

Resultados: En comparación con las clases de control, las clases experimentales muestran un incremento significativo de conocimiento (tamaño de efecto = 0.89), una reducción en la insatisfacción con su cuerpo (TE = 0.12), y en la preocupación por la forma corporal (TE = 0.11), así como un alejamiento del ideal de un cuerpo delgado (SE = 0.13).

Discusión y Conclusiones. Los resultados de esta investigación sugieren que el Programa *Mi cuerpo y yo* es eficaz para la reducción de la insatisfacción corporal en niños y niñas de cuarto y quinto curso de Educación Primaria.

Palabras Clave: Prevención, educación primaria, insatisfacción corporal, factores de riesgo.

Introduction

Body satisfaction may be defined as the degree of congruence between one's perceived actual body and one's desired ideal body. A high discrepancy may be indicative for low body satisfaction. In several studies, an impact of body satisfaction on self-esteem, self-acceptance, and health behavior could be detected (Mond, van den Berg, Boutelle, Hannan, & Neumark-Sztainer, 2011; Walker, 2007).

The physical changes during adolescence are extensive and they do not occur simultaneously. Therefore, girls and boys often have difficulties in adjusting to sometimes strange and awkward-looking new physical forms. Due to sociocultural influences and physical changes at the onset of puberty, boys become concerned with body size and muscularity, girls with physical appearance and weight (Markey & Markey, 2011). For millions of years, the ability to store fat reserves had been vital for the survival of species. Girls acquire subcutaneous fat deposits on hips, thighs, buttocks, breasts, and pubic area. These fat deposits facilitate staying healthy during pregnancy and compensate increased energy demands of lactation. Fat accumulation accelerates in both sexes, but is faster in girls than in boys. About half of the sex differences in physical appearance during early adolescence result from the difference in body fat (Bird, 2006; Malina & Bouchard, 1991; Steinberg, 2010; Susman & Rogol, 2004). In this regard, it is remarkable that according to a study conducted by Smolak, Levine, and Schermer (1998a) only 17% of 5th graders know that puberty initiates body-fat changes.

Previous research has demonstrated that exposure to thin ideals in the media (e.g., television, magazines, cinema, billboards, Internet) is a risk factor for body image concerns and eating disorders (López-Guimerà, Levine, Sánchez-Carracedo, & Fauquet, 2010). Both male and female media ideals of attractiveness promote slenderness and reject overweight. Girls should be thin, and boys should be equipped with well-defined muscles on arms, chest, and shoulders (Lunde, 2009). Many experimental studies exhibited that participants' body satisfaction significantly decreased after viewing idealized thin models (Sepúlveda & Calado, 2012). Therefore, the deconstruction of mass media images is an important tool to prevent body dissatisfaction. Body dissatisfaction can be a source of distress in itself and has been indicated as the most important risk factor for eating disorders (Stice, 2002). With a view to the risk of morbidity and premature death due to eating disorders (Bennaroch, Pérez, & Perales, 2011; Steinhausen, 2002) and to the expenditures of energy, time, and money striving

for an unrealistic thin ideal, the prevention of body dissatisfaction is an economic and humanitarian approach.

Stice and Shaw (2004) found that eating disorder prevention programs were more effective when focusing on older participants (up to the age of 15). Many of the insights that emerged from this widely cited meta-analysis are valuable. However, it may be unethical to delay intervention until students have already developed body dissatisfaction (Dohnt & Tiggemann, 2008). Thus far, preventive efforts have focused on the teenage period, and less attention has been paid to the prepubescent phase. Most of the prevention studies designed for preadolescent girls and boys were uncontrolled evaluations (see the reviews conducted by Levine and Smolak, 2001, 2007; Piran, 2005; Holt & Ricciardelli, 2008; O’Dea, 2005). Only four well-designed school-based prevention studies (with at least a pretest-posttest control group design and reliable measurements) for 4th and 5th graders could be found. Smolak, Levine, and Schermer (1998a, 1998b) developed the elementary school program “Eating smart, eating for me” (ten lessons) and observed an increase in knowledge, a decrease in negative attitudes toward overweight people, but no change in body esteem. Another elementary school program (11 lessons) designed to improve body satisfaction was “Healthy Body Image: Teaching Kids to Eat and Love Their Bodies, Too!” (Kater, Rohwer, & Levine, 2000). Using a pre-post treatment-control design, Kater, Rohwer, and Londre (2002) found significant positive changes for the boys in the treatment condition in all measured targets. However, for girls, they solely observed effects in knowledge and media literacy, but not in body image, body size prejudice, lifestyle behavior, or self-image. Stock et al. (2007) developed and evaluated the elementary school prevention program “Healthy Buddies” that was based on peer teaching. They found no significant intervention effect for body-image perception, self-competence, and eating attitudes. More recently, Bird, Halliwell, Diedrichs, and Harcourt (2013) evaluated an adapted version of the “Happy Being Me” program (Richardson & Paxton, 2010) with 10-11 aged children at elementary school. For girls, they found significant improvements in body satisfaction, appearance comparisons, and eating behaviors, for boys, they found no significant impact on body satisfaction. In summary, there remains a need for school-based prevention programs aimed at 4th or 5th graders that are effective in improving body satisfaction in girls and boys.

The aim of this study was to develop a coeducational school-based prevention program that is effective in improving body satisfaction in preadolescents. School-based pro-

grams to improve body satisfaction should be coeducational, first, to provide learning opportunities due to the presence of both sexes, second, to help reduce weight- and/or shape-based teasing (girls and boys in the classroom are part of the peer environment and play an important role in perpetuating the body image ideal), and third, with regard to an easier implementation in coeducational schools (German elementary schools are generally coeducational). The 5-hour primary prevention program entitled “My Body and I” (Hinz & Denner, 2007) had been designed for 4th graders in coeducational classes and had been evaluated in a pre-post controlled experimental design (N = 398). A significant intervention effect had been found only for the dependant variable “Knowledge about Pubertal Development”. In the current study, this program had been amended with a media literacy unit (aimed at 4th and 5th graders) and had been evaluated using another and bigger sample. Media literacy should be a goal of a body dissatisfaction prevention program on account of the adverse effect of media exposure on body image, thin-ideal internalization, and weight concerns (Becker, 2004; Birkeland et al., 2005; Cohen, 2006). The theoretical background of the “My Body and I” prevention program is the proactive coping theory (Schwarzer & Taubert, 2002). While in the past, coping was viewed primarily as reactive, it has more recently come to be considered proactive and future-oriented (Greenglass, 2002). Eating problems are thought to emerge due to a lack of coping with the pubertal body changes (Smolak, Levine & Gralen, 1993). Before or at the onset of puberty, students should not only receive information about menstruation, human ova and sperm, contraception, pregnancy, and childbirth, but also about the pubertal changes in body shape to help girls and boys to cope better with maturing into a woman or a man. Developing coping strategies for dealing with puberty is much easier if the obstacles are expected, if there is enough time to prepare for pubertal changes, and if one is provided with information about these changes. In order to heighten ecological validity for this research, the “My body and I” curriculum units were taught by ordinary teachers and not by external experts.

Objectives and hypotheses

The goal of this intervention was to help girls and boys to feel positive about their bodies. It was expected that participants in treatment classes, compared with control classes, would exhibit a greater increase in “Knowledge about Pubertal Development” and a decrease in “Body Dissatisfaction”, “Body Shape Concerns”, and “Thin-Ideal Internalization”.

Method

Participants

The study participants were 972 students (485 girls and 484 boys; three children did not answer this item) in grades 4 or 5 from 40 school classes in Germany (Baden-Wuerttemberg, Saarland) and 2 school classes in France (French–German bilingual classes in Nancy). The mean age of the sample was 10.5 years ($SD = 1.1$). Of the classes, 24 classes were located in 15 rural schools and 18 classes were located in 7 urban or suburban schools. Of the classes, 25 classes ($N = 591$; 308 girls, 282 boys) served as the intervention group, and 17 classes ($N = 381$; 177 girls, 202 boys) served as controls. There was no significant difference between intervention and control group with regard to age [$t_{(925)} = 0.94, p = 0.35$], sex [$\chi^2_{(1)} = 2.79, p = 0.10$], and rural/urban areas [$\chi^2_{(1)} = 0.63, p = 0.43$]. Of the students, 97.5% were present at the time of the pretest, and 95.7% were present at the posttest. Only the students who were available at both pre- and posttest (93.2% of the sample; 454 boys and 452 girls) were included in the analysis of program effectiveness. In the treatment condition, 6.1% of the students were absent at the pre- or post-test, and in the control condition, 7.9% of the students were missing at one period of measurement; this difference is not significant ($[\chi^2_{(1)} = 1.16, p = 0.28]$). Students who were absent at pre- or posttest were unavailable due to illness, school administration activities, or relocation.

Intervention

With an eye toward a future broader dissemination, the program was developed as a short-term intervention (six school lessons, i.e., 6 x 45 min) to be integrated into the students' regular class schedule. The main topics and goals of the lessons are elaborated in Table 1. Guided meditation and relaxation exercises were central elements of the intervention and were chosen to promote body satisfaction. Texts on puberty were written to encourage students to recognize that the fat increase in girls' buttocks, hips, thighs, upper arms, breasts, and pubic area is a normal and necessary part of pubertal growth. Furthermore, students should realize the tremendous interindividual variation in pubertal timing. As part of the students' media literacy training, films and photographs (real and digitally altered celebrity images) were shown to exemplify the media's various forms of manipulation. Students were encouraged to understand that if they wish to look like the slim and/or muscular media images, they are adhering to an unattainable (digitally altered) beauty and body image.

Table 1: Outline of the “My Body and I” curriculum units

Unit	Main Topics	Goals
0	Homework: complete a profile of yourself (e.g., “Things I like about myself...”)	◦ self-consciousness
1	In-class presentation of students’ profiles Body appreciation guided relaxation	◦ self-esteem ◦ mindfulness
2	Lecture 1: Growing up Team building exercise: Experience of the body Guided meditation: I like me as I am	◦ understand and accept pubertal changes ◦ perceive organic experience ◦ accept one’s own body
3/4	Lecture 2: Changing body proportions during puberty (e.g., normal fat depositions; inter- and intra-individual asynchronies)	◦ view wider hips and fat gain during puberty as normal ◦ view variations in pubertal timing as normal
5	Media literacy (making of a cover girl/cover boy: lighting, digital manipulation, and thinness/muscularity)	◦ develop resistance to cultural beauty messages
6	Team-building exercise: “Hot shower” Quiz	◦ self-acceptance

Instruments

Body Dissatisfaction was measured using the German version (Paul & Thiel, 2005) of the Body Dissatisfaction subscale of the Eating Disorders Inventory (EDI-2) (Garner, 1991). This subscale consists of 9 items that attempt to assess each individual’s beliefs about the shape and size of specific body parts associated with fat increases during puberty, such as “I think my thighs are too fat”. In the current sample, internal consistency was high in both the pretest (Cronbach’s alpha = 0.86) and the posttest (Cronbach’s alpha = 0.89).

Body Shape Concerns were measured using a child-adapted version of the Shape Concern subscale of the EDE-Q (Fairburn & Beglin, 1994). The Shape Concern subscale measures dissatisfaction and preoccupation with body shape, the fear of gaining weight, the

importance of body shape to the person, feelings of fatness, and discomfort with the body. Wade, Byrne, and Bryant-Waugh (2008) found a good internal reliability for this subscale. In light of the German version of the EDE-Q of Hilbert and Tuschen-Caffier (2006) and the age-appropriateness of the content, the sentence length of the items in the Shape Concern subscale was shortened. For this revised scale, a Cronbach's alpha coefficient of 0.83 was achieved at pretest; 0.86 was achieved at posttest.

Ideal Female Body Shape was measured using the Body Image Silhouettes (BIS) of the Kids' Eating Disorder Survey (Childress, Jarrell & Brewerton, 1993). In this study, the Body Image Silhouettes (BIS) were used as a measure of ideal female body shape. The respondents (girls and boys) were instructed to mark the most beautiful female figure (from nine drawings of preadolescent girls ranging in size from very thin to obese). Each silhouette was assigned a number (1 = smallest; 9 = largest) and a measurement scale (1.0, 1.1 ... 8.9, 9.0) appeared under the silhouettes to allow respondents to select a position between two silhouettes if they wished. Candy and Fee (1998) assessed the psychometric properties of the BIS and found a two-week test-retest reliability of 0.74 for ideal body shape. In this study, the four-week test-retest reliability for ideal female body shape was 0.71 (for the control group).

Knowledge about Pubertal Development was measured by a self-constructed 14-item scale. This scale included solely true/false questions and measured students' knowledge about pubertal development (sample item: "Due to puberty, girls accumulate body fat"). Cronbach's alpha was poor at pretest ($\alpha = 0.59$) and good at posttest ($\alpha = 0.74$).

Program Satisfaction was measured at posttest. The treatment students rated the program as a whole from 1 – excellent to 5 – poor ("Overall, how did you like the 'My Body and I' lessons?").

Procedure

This study employed a repeated measures design comparing pre- and post-intervention scores on body dissatisfaction, body shape concerns, ideal female body shape, and knowledge about pubertal development. Classes were randomly assigned to treatment or control condition. This research was conducted in accord with the Helsinki Declaration of ethical principals for medical research involving human subjects. For detailed analysis, it may be important to

know the participants' body mass index (BMI) scores. However, using a digital scale in the classroom to measure elementary students' weight could be harmful because it may trigger or reinforce unhealthy weight control behaviors. Thus, it appeared to be unethical to measure participants' BMI. Parents, students, and school principals provided informed consent after the presentation of the goals and the content of "My Body and I". The average response rate of the evaluation questionnaires was 99.9%. In the treatment condition, the program was facilitated by class teachers or biology teachers within a period of one to two weeks. Each teacher received teaching materials and written instructions.

Data analysis

The statistical package SPSS for Windows was used for descriptive statistics, group comparisons, MANOVA and ANOVA tests. Cohen's *d* was used for the calculation of effect sizes. The significance level was set at $p < 0.05$ with a Bonferroni-Holm correction for multiple comparisons.

Results

Satisfaction with the program

Student satisfaction with the program was quite high. Of the students, 35% rated the lessons as excellent, 39% as good, 22% as fair, 2% as less good, and 3% as not good. There was no significant sex difference in the level of program satisfaction [$t_{(556)} = 0.55, p = 0.59$].

Program effectiveness

A multivariate analysis of variance (MANOVA), using a general linear model (GLM), was performed to analyze the effects of condition (treatment vs. control) and sex (boys vs. girls) on the dependent variables "Body Dissatisfaction", "Body Shape Concern", "Ideal Female Body Shape", and "Knowledge about Pubertal Development". Results from the MANOVA revealed a significant multivariate main effect of time [$F_{(4,865)} = 74.73, p < 0.001$], a significant time by condition (treatment vs. control) interaction [$F_{(4,865)} = 59.67, p < 0.001$], and a significant main effect of sex [$F_{(4, 865)} = 29.28, p < 0.001$]. There was no statistically significant time by sex [$F_{(4,865)} = 2.00, p = 0.09$] or time by condition by sex interaction [$F_{(4,865)} = 0.34, p = 0.85$]. Therefore, supplemental sex-separated analyses on program effectiveness were not appropriate. Univariate ANOVA tests for dependent variables "Body Dissatisfaction (EDI 2)", "Body Shape Concern (EDE-Q)", "Desired Body Shape (KEDS)", and

“Knowledge about Pubertal Development” were conducted on the full sample. In order to compensate for the possibility of type I errors due to multiple testing, the conventional alpha level of .05 was adapted by a Bonferroni-Holm correction. Table 2 presents the pre- and post-test mean scores of the treatment and control groups and the ANOVA tests for time by condition interaction (intervention effects) for all dependent variables.

Table 2. Univariate ANOVA tests for dependent variables “Body Dissatisfaction (EDI 2)”, “Body Shape Concern (EDE-Q)”, “Desired Body Shape (KEDS)”, and “Knowledge about Pubertal Development”

	Group	Pretest	Posttest	Time by Condition			
		<i>M (SD)</i>	<i>M (SD)</i>	<i>F</i>	<i>p</i>	η^2	<i>df</i>
Body Dissatisfaction (EDI 2) ^a	TG	3.22 (.67)	3.26 (.69)	7.97	.005*	.01	1/870
	CG	3.26 (.61)	3.23 (.70)				
Body Shape Concern (EDE-Q) ^b	TG	3.04 (.74)	3.08 (.77)	6.73	.010*	.01	1/870
	CG	3.17 (.76)	3.12 (.80)				
Desired Body Shape (KEDS) ^c	TG	3.33 (.80)	3.45 (.71)	5.51	.019*	.01	1/870
	CG	3.23 (.77)	3.24 (.78)				
Knowledge about Pubertal Development ^d	TG	9.51 (1.78)	11.46 (1.83)	226.9	.000*	.21	1/870
	CG	9.26 (2.04)	9.39 (2.10)				

Notes: ^a Higher scores indicate greater satisfaction with one’s body (min. = 1, max. = 4).

^b Higher scores indicate lower body shape concern (min. = 1, max. = 4).

^c Higher scores indicate less thin-ideal internalization (min. = 1, max. = 9).

^d Higher scores indicate greater knowledge about pubertal development (min. = 0, max. = 14).

TG = treatment group, CG = control group

* = significant p-values after post-hoc Bonferroni-Holm corrections due to multiple testing

Pubertal Development

Significant time (pretest vs. posttest) by condition (treatment vs. control) interaction effects were observed for all dependent variables. Compared with the control group, the treatment group exhibited a significant increase in body satisfaction, a decrease in body shape concern, a stronger shift away from the thin female body-shape ideal and a greater increase in knowledge about pubertal development. Effect sizes for program impacts were calculated according to Cohen’s *d* as the difference between the pre- and post-test scores divided by the

pooled standard deviation. For the increase in body satisfaction, an effect size of $d = 0.12$ was computed; for the decrease in body shape concern, $d = 0.11$; for shifting away from the thin body shape ideal, $d = 0.13$; and for increased knowledge about pubertal development, $d = 0.89$.

A post-hoc data analysis of the main effect of sex revealed that girls, compared to boys, were more dissatisfied with their bodies, were more concerned about their body shape, and chose thinner female figures as ideal. Girls' scores on "Knowledge about Pubertal Development" were higher than boys' scores. Interestingly, one striking exception could be found: Compared with the boys, girls knew less about fat accumulation through puberty [$t_{(739)} = 5.22$, $p < 0.001$]. At pretest, only 17% of the treatment girls knew that fat accumulation is a normal part of pubertal process, while at posttest, 76% of the girls knew the correct answer [$\chi^2_{(1)} = 162.66$, $p < 0.001$]. Furthermore, at pretest, only 35% of the treatment girls knew that during puberty hipbones widen to facilitate childbirth. At posttest, 90% of the girls in the treatment condition knew the correct answer [$\chi^2_{(1)} = 145.29$, $p < 0.001$], whereas there was no significant change in the control group.

Discussion

The purpose of the current study was to test the efficacy of the modified school-based "My Body and I" program, which was developed to improve body satisfaction in preadolescent girls and boys. It was predicted that participation in the "My Body and I" lessons would enhance students' knowledge about pubertal development and decrease body dissatisfaction, body shape concerns and thin-ideal internalization. Up to now, with regard to the objective of promoting body satisfaction in 4th and 5th graders, only four well-designed school-based controlled intervention studies could be found (Bird et al., 2013; Kater et al., 2000; Kater et al., 2002; Smolak et al., 1998a, 1998b; Stock et al., 2007). The findings of all four studies verified the effectiveness of the developed programs, but failed to provide evidence for an impact on body satisfaction in girls and boys as well. The findings of the current study indicate that the "My Body and I" program was effective not only to increase knowledge about pubertal development, but also to reduce body dissatisfaction, body shape concerns, and thin-ideal internalization.

The developed program was not only relevant to girls. It is noteworthy that the time by condition by sex interaction was not significant and that boys' satisfaction with the program

was not lower than that of the girls. The extent of girls' ignorance of pubertal fat accumulation at pretest and the increase in knowledge at posttest were particularly remarkable (this result is in line with findings reported by Smolak, Levine and Schermer, 1998a). The data of the current study provide some evidence that "*My Body and I*" is successful in making both girls and boys aware of the tremendous variation of pubertal changes across individuals. Girls and boys learned that the age of onset of puberty differs among individuals and that everyone has one's own biological schedule. While previous research has yielded some evidence that knowledge on eating disorders and their characteristics (self-induced vomiting, laxative abuse, or starvation) could provoke students to imitate unhealthy methods of weight control (Carter, Stewart, Dunn, & Fairburn, 1997; O'Dea & Abraham, 2000), the current results suggest that knowledge about pubertal development may have a beneficial impact on body satisfaction.

Although the achieved time by condition effects can be considered encouraging, the present study must acknowledge several limitations. First, short-term effects are not predictive of long-term outcomes. On the basis of this research, it is not possible to determine whether the intervention's benefits will diminish, vanish, or sustain in the long-term. Second, this study relied on self-report questionnaires, which may impair the reliability of the data. Third, according to Cohen's criteria, all intervention effects concerning body satisfaction were considerably smaller than minimal clinically important difference (MCID) in clinical trials; only the effect on knowledge was large. However, these findings are in line with the results of the meta-analysis performed by Stice and Shaw (2004). Additionally, ceiling effects may have contributed to the small treatment effects because at pretest boys' and girls' average body satisfaction scores were relatively high, which limited the capacity for improvement.

Nonetheless, the present study has some specific methodological strengths. First, the sample size is relatively large; second, an appropriate control group is used; third, the measurements are child-adapted and their reliability is good or acceptable; and finally, the brevity of this prevention program and the use of school teachers instead of outside program developers or other professional distributors heightens the ecological validity of this research. The "*My Body and I*" program requires no special prerequisites or skills and is therefore easy to implement. Stice, Shaw, and Marti (2007) had found that eating disorder prevention programs delivered by external experts were more effective than those applied by teachers. Therefore, in the context of this meta-analytic review, the results of the current research are encouraging.

A future challenge is the examination of the program's long-term effects. This requires the development and implementation of repeated booster sessions and follow-up measurements. Furthermore, qualitative research techniques may provide a better understanding of instructional experiences and classroom interactions in the treatment group.

School-based prevention programs should start in elementary school because it is difficult to change strongly established negative attitudes toward one's body and shape. Brief and coeducational approaches are necessary to facilitate implementation in a busy and often stressful school environment. The program's short-term effects in a natural coeducational setting were encouraging, in particular in the context of previous research outcomes. In sum, the present study indicates that "*My Body and I*" has the potential to be a successful school-based program to promote body satisfaction in preadolescent girls and boys, before unhealthy body shape concerns and eating disorders may become prevalent.

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References

- Becker, A. E. (2004). Television, disordered eating, and young women in Fiji: negotiating body image and identity during rapid social change. *Culture, Medicine and Psychiatry*, 28, 533–559. doi: 10.1007/s11013-004-1067-5
- Bennaroch, A., Pérez, S., & Perales, J. (2011). Factors influencing adolescent eating behavior: Application and validation of a diagnostic instrument. *Electronic Journal of Research in Educational Psychology*, 9(3), 1219-1244.
- Bird, E. L., Halliwell, E., Diedrichs, P. C., & Harcourt, D. (2013). Happy Being Me in the UK: a controlled evaluation of a school-based body image intervention with pre-adolescent children. *Body Image*, 10, 326-334. doi: <http://dx.doi.org/10.1016/j.bodyim.2013.02.008>
- Bird, P. J. (2006). Why does fat deposit on the hips and thighs of women and around the stomachs of men? *Scientific American*, May 15, 125–127. Retrieved from: <http://www.scientificamerican.com/article.cfm?id=why-does-fat-deposit-on-t>

- Birkeland, R., Thompson, J. K., Herbozo, S., Roehrig, M., Cafri, G., & van den Berg, P. (2005). Media exposure, mood, and body image dissatisfaction: an experimental test of person versus product priming. *Body Image, 2*, 53–61. doi: <http://dx.doi.org/10.1016/j.bodyim.2004.11.002>
- Candy, C. M., & Fee, V. E. (1998). Reliability and concurrent validity of the Kids' Eating Disorders Survey (KEDS) Body Image Silhouettes with preadolescent girls. *Eating Disorders, 6*, 297–308.
- Carter, J. C., Stewart, D. A., Dunn, V. J., & Fairburn, C. G. (1997). Primary Prevention of Eating Disorders: Might it do more harm than good? *International Journal of Eating Disorders, 22*, 167–172.
- Childress, A. C., Jarrell, M. P., & Brewerton, T. D. (1993). The Kids' Eating Disorders Survey (KEDS): Internal consistency, component analysis, and reliability. *Eating Disorders 1*, 123–133.
- Cohen, S. B. (2006). Media exposure and the subsequent effects on body dissatisfaction, disordered eating, and drive for thinness: a review of the current research. *Mind Matters: The Wesleyan Journal of Psychology, 1*, 57–71. Retrieved from: <http://www.ddwei.info/pdf/subsequent/4.pdf>
- Dohnt, H. K., & Tiggemann, M. (2008). Promoting positive body image in young girls: an evaluation of 'Shapesville'. *European Eating Disorders Review, 16*, 222–233. doi: 10.1002/erv.814
- Fairburn, C. G., & Beglin, S. J. (1994). Assessment of eating disorders: interview or self-report questionnaire? *International Journal of Eating Disorders, 16*, 363–370.
- Garner, D. M. (1991). *Eating Disorder Inventory – 2 Professional Manual*. Odessa, FL: Psychological Assessment Resources Inc.
- Greenglass, E. R. (2002). Proactive coping. In E. Frydenberg (Ed.), *Beyond coping: Meeting goals, vision, and challenges* (pp. 37–62). London: Oxford University Press.
- Hilbert, A., & Tuschen-Caffier, B. (2006). *Eating Disorder Examination – Questionnaire Deutschsprachige Übersetzung* [German Translation]. Münster: Verlag für Psychotherapie.
- Hinz, A., & Denner, C. (2007). Prävention essstörungsrelevanter Körperbildwahrnehmungen: Entwicklung und Evaluation einer Unterrichtseinheit in Klasse 4 [Preventive measures in the case of body image perceptions relating to eating disorders. Evaluation of a teaching unit in elementary school]. *Zeitschrift für Empirische Pädagogik, 21*, 271–290.

- Holt, K. E., & Ricciardelli, L. A. (2008). Weight concerns among elementary school children: a review of prevention programs. *Body Image, 5*, 233–243. doi: 10.1016/j.bodyim.2008.02.002.
- Kater, K. J., Rohwer, J., & Levine, M. P. (2000). An elementary school project for developing healthy body image and reducing risk factors for unhealthy and disordered eating. *Eating Disorders, 8*, 3–16.
- Kater, K. J., Rohwer, J., & Londre, K. (2002). Evaluation of an upper elementary school program to prevent body image, eating und weight concerns. *Journal of School Health, 72*, 199–204. doi: 10.1111/j.1746-1561.2002.tb06546.x
- Levine, M. P., & Smolak, L. (2001). Primary prevention of body image disturbances and disordered eating in childhood and early adolescence. In J. K. Thompson & L. Smolak (Eds.), *Body image, eating disorders, and obesity in youth: assessment, prevention, & treatment* (pp. 237–260). Washington, DC: American Psychological Association.
- Levine, M. P., & Smolak, L. (2007). *Prevention of negative body image, disordered eating, and eating disorders: an update*. In S. Wonderlich, J. Mitchell, M. De Zwaan & H. Steiger (Eds.), *Annual review of eating disorders: Part I -- 2007* (pp. 1–14). Oxford: Radcliffe.
- López-Guimerà, G., Levine, M. P., Sánchez-Carracedo, D., & Fauquet, J. (2010). Influence of mass media on body image and eating disordered attitudes and behaviors in females: a review of effects and processes. *Media Psychology, 13*, 387–416. doi: 10.1080/15213269.2010.525737
- Lunde, C. (2009). *What people tell you gets to you. Body satisfaction and peer victimization in early adolescence*. Dissertation, Department of Psychology, University Gothenburg, Sweden. Retrieved from: https://gupea.ub.gu.se/bitstream/2077/19350/1/gupea_2077_19350_1.pdf
- Malina, R. M., & Bouchard, C. (1991). *Growth, maturation, and physical activity*. Illinois: Human Kinetics Books.
- Markey, C. N., & Markey, P. M. (2011). Body Image. In R. J. R. Levesque (Ed.), *Encyclopedia of Adolescence* (pp. 310–320). New York: Springer.
- Mond, J., van den Berg, P., Boutelle, K., Hannan, P., & Neumark-Sztainer, D. (2011). Obesity, body dissatisfaction, and emotional well-being in early and late adolescence: Findings from the project EAT study. *Journal of Adolescent Health, 48*, 373–378. doi: 10.1016/j.jadohealth.2010.07.022

- O'Dea, J. A. (2005). School-based health education strategies for the improvement of body image and prevention of eating problems. An overview of safe and successful interventions. *Health Education, 105*, 11–33. Retrieved from: <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.485.727&rep=rep1&type=pdf>
- O'Dea, J. A., & Abraham, S. (2000). Improving the body image, eating attitudes, and behaviours of young male and female adolescents: a new educational approach that focuses on self-esteem. *International Journal of Eating Disorders, 28*, 43–57. doi: 10.1002/(SICI)1098-108X(200007)28:13.0.CO;2-D
- Paul, T., & Thiel, A. (2005). *EDI-2 (Eating Disorder Inventory-2). German Version*. Göttingen: Hogrefe.
- Piran, N. (2005). Prevention of eating disorders: a review of outcome evaluation research. *Israel Journal of Psychiatry and Related Sciences, 42*, 172–177. Retrieved from: http://doctorsonly.co.il/wp-content/uploads/2011/12/2005_3_5.pdf
- Richardson, S. M., & Paxton, S. J. (2010). An evaluation of a body image intervention based on risk factors for body dissatisfaction: a controlled study with adolescent girls. *International Journal of Eating Disorders, 43*, 112–122. doi: 10.1002/eat.20682
- Schwarzer, R., & Taubert, S. (2002). Tenacious goal pursuits and striving toward personal growth: Proactive coping. In E. Frydenberg (Ed.), *Beyond Coping: Meeting Goals, Visions, and Challenges* (pp. 20–35). London: Oxford University Press.
- Sepúlveda, A. R., & Calado, M. (2012). Westernization: the role of mass media on body image and eating disorders. In I. Jáuregui-Lobera (Ed.), *Relevant topics in eating disorders* (pp. 47–64). InTech. doi: 10.5772/31307
- Smolak, L., Levine, M. P., & Gralen, S. (1993). The impact of puberty and dating on eating problems among middle school girls. *Journal of Youth and Adolescence, 22*, 355–368.
- Smolak, L., Levine, M. P., & Schermer, F. (1998a). A controlled evaluation of an elementary school primary prevention program for eating problems. *Journal of Psychosomatic Research, 44*, 339–353.
- Smolak, L., Levine, M. P., & Schermer, F. (1998b). Lessons from lessons: an evaluation of an elementary school prevention program. In W. Vandereycken & G. Noordenbos (Eds.), *The prevention of eating disorders* (pp. 137–172). New York: New York University Press.
- Steinberg, L. (2010). *Adolescence* (9th edition). New York: McGraw-Hill.

- Steinhausen, H.-C. (2002). The outcome of anorexia nervosa in the 20th century. *American Journal of Psychiatry*, *159*, 1284–1293. <http://dx.doi.org/10.1176/appi.ajp.159.8.1284>
- Stice, E. (2002). Risk and maintenance factors for eating pathology: A meta-analytic review. *Psychological Bulletin*, *128*, 825–848. doi: 10.1037//0033-2909.128.5.825
- Stice, E., & Shaw, H. (2004). Eating disorder prevention programs: a meta-analytic review. *Psychological Bulletin*, *130*, 206–227. doi: 10.1037/0033-2909.130.2.206
- Stice, E., Shaw, H., & Marti, N. (2007). A meta-analytic review of eating disorder prevention programs: encouraging findings. *Annual Review of Clinical Psychology*, *3*, 207–231. doi: 10.1146/annurev.clinpsy.3.022806.091447
- Stock, S., Miranda, C., Evans, S., Plessis, S., Ridley, J., Yeh, S., & Chanoine, J.-P. (2007). Healthy Buddies: a novel, peer-led health promotion program for the prevention of obesity and eating disorders in children in elementary school. *Pediatrics*, *120*, 1059–1068. doi: 10.1542/peds.2006-3003
- Susman, E. J., & Rogol, A. (2004). Puberty and psychological development. In R. M. Lerner & L. Steinberg (Eds.), *Handbook of adolescent psychology* (2nd edition) (pp. 15–44). New Jersey: John Wiley & Sons.
- Wade, T. D., Byrne, S., & Bryant-Waugh, R. (2008). The eating disorder examination: norms and construct validity with young and middle adolescent girls. *International Journal of Eating Disorders*, *41*, 551–558. doi: 10.1002/eat.20526
- Walker, K. (2007). *Mechanisms of self-esteem change in overweight children participating in a family-based weight management program*. Dissertation, University of Florida. Retrieved from: http://ufdcimages.uflib.ufl.edu/UF/E0/02/11/27/00001/walker_k.pdf