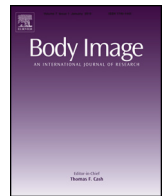




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BodiMojo: Effective Internet-based promotion of positive body image in adolescent girls

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ABSTRACT

This study tested the efficacy of an Internet-based health promotion program, *BodiMojo*, designed to promote positive body image in adolescents. Participants were 178 students (mean age 15.2 years, 67.6% ethnic minority) in three public high schools. Intervention groups used *BodiMojo* for four weekly health class periods, while controls participated in their usual health curriculum. Body image measures were given at baseline, post-intervention, and 3 months. Girls reported decreased body dissatisfaction ($p < .05$), decreased physical appearance comparison ($p < .05$), and increased appearance satisfaction ($p < .05$), relative to controls. Effects were not maintained at 3-month follow-up. No significant differences were found between the intervention and control groups with boys. Moderation analyses suggested positive effects for diverse adolescents as well as those who were overweight or indicated baseline high body dissatisfaction. *BodiMojo* appears to be modestly effective in decreasing body image concerns among adolescent girls in the short term.

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Introduction

Poor body image is a major health issue for adolescents and raises the risk for eating disorders, extreme weight loss behaviors, depression, suicidal ideation, and low self-esteem (Bearman & Stice, 2008). Among adolescent girls, body dissatisfaction has been reported to be as high as 70% (Levine & Smolak, 2002) and a growing number of boys are also affected by poor body image issues (Muisse, Stein, & Arbess, 2003).

Because body dissatisfaction has been linked prospectively with adverse health outcomes (Neumark-Sztainer, Paxton, Hannan, Haines, & Story, 2006), preventive efforts are needed (Stice, Rohde, Shaw, & Gau, 2011). Effective programs reduce body image concerns by targeting risk factors such as internalization of the thin body ideal, low self-esteem, body comparison, and appearance conversation, with average effect sizes of .14 and follow-up lengths of over 1 year (Richardson & Paxton, 2010; Stice, Shaw, & Marti, 2007). Moreover, the importance of peers and appearance-related comparisons in body image in adolescent girls has been highlighted in longitudinal studies (Paxton, Schutz, Wertheim, & Muir, 1999),

including data from the National Longitudinal Study of Adolescent Health indicating that girls' comparisons with similar others had the strongest association with individual girls' reports of trying to lose weight, even when they were at normal weight (Mueller, Pearson, Muller, Frank, & Turner, 2010). Thus, addressing body image and appearance comparison in adolescents has potentially important implications for health outcomes.

To date, only one Internet-based program, *StudentBodies*, has been tested in several countries with varying samples, although almost exclusively among college women (Beintner, Jacobi, & Taylor, 2012). A meta-analysis of ten studies using this program (follow-up ranged from 12 weeks to 12 months) included only one study with high-school students, and concluded that the program led to reductions in negative body image and weight and shape concerns, with a moderate effect size at follow-up (Beintner et al., 2012). Effective and feasible Internet-based body image programs specifically designed for high school students of both genders are needed.

Few programs have directly addressed body image with adolescents and only a small number target body image in boys. Moreover, most existing prevention programs are professional-led, which are time and labor-intensive (Wilksch, Durbridge, & Wade, 2008). Internet-based programs are accessible to large groups, cost-effective relative to face-to-face delivery, and have the potential to offer a social learning experience through shared content and online interactions while also delivering private and confidential

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information. Online intervention delivery may assist in overcoming obstacles unique to body image concerns (Paxton & Franko, 2010). The current study tested the efficacy of an Internet-based program, *BodiMojo*, to examine its impact on body image in a diverse sample of high school students as a first step toward investigating its usefulness as an independent online intervention. The primary hypotheses were that exposure to *BodiMojo*, relative to the control condition, would: (1) improve participants' body image and (2) decrease peer-based appearance-related comparisons.

Method

Design

The study was a randomized, controlled efficacy trial (RCT) conducted from September 2009 to June 2010 comparing *BodiMojo* to standard curriculum health education classes in three Boston-area high schools and was approved by the Northeastern University institutional review board and the Office of Research, Assessment and Evaluation of the Boston Public Schools system. Participants completed a baseline assessment, a post-intervention assessment 4–6 weeks later, and a follow-up assessment 3 months after the baseline assessment.

Intervention

*BodiMojo*¹ is an Internet-based program that promotes health behavior change through technology and social engagement, offering a personalized experience by providing relevant information and feedback, goal-setting, specialized body image and related content (e.g., nutrition), interactive games and quizzes, and videos that are specific to this adolescent age group. The name *BodiMojo* was the outcome of a series of focus groups with adolescents who determined this name to be their favorite from among over 25 choices. The name is meant to imply a holistic approach to health and wellness, where “mojo” infers one’s personal charm or way of being and holding a positive attitude, as exemplified by the tagline “BodiMojo = Body + Motivation + Journey” described on the homepage. The program was tailored by gender with the inclusion of gender-focused feedback on the health assessments and gender-specific articles. Additionally, there was a deliberate effort to include photos of ethnically and racially diverse and urban youth and to provide content relevant to a diverse audience. Social cognitive theory underlies much of the program emphasis on peer modeling, social networking, and cognitive-based strategies for change behaviors (Bandura, 1998). Elements of the design and content of the website invoke features of the Health Belief Model (e.g., pros and cons of increasing fruit and vegetable intake), the Theory of Planned Behavior (e.g., focus on intentions in making behavioral change), and the transtheoretical model in promoting health behaviors and readiness for change (Brug, de Vet, de Nooijer, & Verplanken, 2006; Marshall & Biddle, 2001; Steptoe, Perkins-Porras, Rink, Hilton, & Cappuccio, 2004).

The *BodiMojo* program delivered in the study provided four main areas of educational content and interactive material related to body image using a variety of formats that included assessments and quizzes, brief articles, interactive games, and videos (see Appendix A). Participants began each of these four content areas with a brief assessment about that topic. The program content included universal prevention strategies to decrease body

dissatisfaction (e.g., critical thinking skills related to cultural values for weight, beauty and appearance; media literacy skills), as well as selective prevention skills to promote healthy body image, healthy eating, and physical activity behaviors based on students' profiles (e.g., BMI, gender, physical activity participation). Each educational area was informed by the theories described above and designed from a developmental perspective, whereby sensitive adolescent issues such as body confidence, maturational changes, social comparison, and the need to fit in were considered carefully across all program content. The program promotes a holistic approach to body image and self-care and the feedback provided to the participants (e.g., based on responses to quizzes) was designed to bring awareness to particular attitudes and behaviors that could potentially be problematic in each of the content areas. *BodiMojo*, as a web-based program, was not intended to be experienced in a linear modality (e.g., “One size fits all”), but rather to be exploratory and personally relevant. The program was designed so that teachers could choose to deliver the content as part of their health class material or as an adjunct to other curriculum and to do so flexibly over a range of weeks or number of lessons.

However, for purposes of the efficacy study, to ensure that all participants received the same minimal dose of content each session during the brief one-month intervention, participants were told to follow a program guide over each of the four sessions (see Appendix A). Students were expected to take the personalized assessments and to engage with interactive tools and health calculators, health articles and teen videos in the following 4-session lesson plan. Session 1 included web registration and user profile input including gender, grade in school, height/weight (BMI), and participation in organized sports or physical activity. Students were asked to take the fitness assessment, i.e., detail their physical activity over the past week (days and minutes), and respond to questions related to motivation, barriers, supports, and beliefs about exercise. The provision of this information by the participant resulted in tailored feedback called a “*BodiMojo* Snapshot: Fitness,” an example of which is “Being a girl means that your body naturally stores and uses the energy from body fat differently than guys. Any eating plan and physical activity routine should take this into account. Too little exercise can make it easier to gain weight. But extreme amounts of exercise can interfere with hormone regulation, which can result in irregular or no periods.” As the tailored feedback was delivered, students were then directed via links and visual cues (checkmarks) to various interactive tools and health articles that related specifically to them based on information they provided. Similarly, Session 2 focused on eating behaviors, with a series of assessments related to nutrition habits and beliefs, resulting in a “*BodiMojo* Snapshot: Nutrition.” Interactive tools focused on information about healthy food choices, fast food, and energy balance in the context of a healthy body. Session 3 began with the body image assessment and also assessed the potential risk for problematic eating behaviors, resulting in “*BodiMojo* Snapshot: Body Image.” Importantly, feedback in all content areas was crafted to offer targeted information based on total scores on assessments (e.g., low, medium, high scores) or individual responses to specific questions (e.g., yes or no to use of dietary supplements) in a manner that was relatable to teen life and supportive in tone. For example, the following is introductory feedback for low or high body image results:

(*Low Body Image Score*) “It sounds like you don’t really like how you look and don’t feel great about your body. This is a tough thing, because for many teens, body image can affect self-esteem, too. It’s hard to change your feelings about your body, but it can be done.”

(*High Body Image Score*) “You like yourself and are content with your looks – which is great, especially in a culture of perfection that makes it hard to feel good about who you are. Remember, when thinking about your talents, interests or appearance, everybody is

¹ (www.BodiMojo.com), owned by BodiMojo, Inc., (TC, founder) is still in the pilot phase and does not generate revenue. Commercial plan for the future includes school-based subscription and licensing. However, at present, the website is free with open access.

different and you're unique and special." The body image interactive tools were developed based on eating disorder prevention skills and focused on how to respond to fat talk and how to decrease social comparisons when interacting with peers. Suggestions for reframing automatic negative thoughts were provided and interactive tools offered ways to improve body image. Session 4 allowed students to explore any content they may have missed in previous sessions, to retake assessments, and to view the teen-produced videos on body image, self-esteem, healthy eating, and physical activity; as an option, students could engage in areas of the website pertaining to daily hassles and stress management titled "*BodiMojo* Snapshot: Stress." Participants were provided with feedback related to their described daily hassles, links to emotional eating, and articles about the impact of stress on self-esteem, in addition to information about affect regulation and cognitive behavioral strategies related to body and self-care.

Participants

Four out of six high schools approached in the greater Boston area agreed to participate in the study. However, the data from one school were compromised and therefore excluded from analyses. Unfortunately the software program used to collect data crashed during post-test data collection for this school. After conversations with the software company, we were not able to salvage or capture the data, and the study was discontinued in that school.

On-site health teachers gave out 192 parental consent forms, of which 178 signed consents were returned, yielding a participation rate of 93%. Inclusion criteria were: (1) enrollment in a 9–12th grade classroom; (2) parental consent; and (3) participant assent.

The sample consisted of 65 boys (37%) and 113 girls (64%). The mean age (*SD*) of the boys was 15.4 years (1.04) and of the girls was 15.2 years (0.78). The sample was 33.5% African American, 32% White, 18.8% Hispanic, 11% bi-racial, and 4.5% Asian American. Mean (*SD*) body mass index was 22.8 (4.9) for the intervention group and 22.5 (3.6) for the control group, a non-significant difference ($p > .05$).

Procedure

Classes were randomly assigned to either the intervention or the control condition, with 2–3 classes per school in each condition. Students in the intervention condition used the *BodiMojo* website during four 45-min class periods, while control subjects continued attending their standard health education courses in the regular classroom. The standard health curriculum follows the Massachusetts Department of Education frameworks on nutrition, health, and safety and schools have latitude in how they cover the content; body image is not stated as a specific content area. Participants were given specific instructions to complete different modules of the *BodiMojo* program (e.g., interactive games, articles, and videos) over four weeks in the schools' computer labs and were overseen by the authors to ensure compliance for study fidelity. All participants completed a baseline assessment, a post-intervention assessment 4–6 weeks later, and a follow-up assessment 3 months after the baseline assessment. All participants received a \$15 gift card upon completion of the post and 3-month assessment.

All assessments were completed on a secure website using Concentus® software. At baseline, participants were weighed and height was measured individually and in private as described by Lohman, Roche, and Martorell (1988).

Measures

Demographic Questionnaire. Participants' age, gender, race/ethnicity, and year in school were assessed.

Body Esteem Scale for Adolescents and Adults (BES). The BES is a 23-item scale assessing the affective evaluations of one's body, using a five-point Likert scale ranging from 0 (never) to 4 (always), with higher scores indicating greater body esteem (Mendelson, Mendelson, & White, 2001). The BES has three subscales: (1) Appearance (e.g., "I like what I look like in pictures"); (2) Weight (e.g., "I am satisfied with my weight"); and (3) Attribution (e.g., "People my own age like my looks"). The subscales have good internal consistency (Cronbach's alphas in the original study were .93, .95, and .81, respectively) and have shown good discriminant validity (Mendelson et al., 2001). Cronbach's alpha coefficients for boys and girls, respectively, in the current sample were $\alpha = .83$ and $\alpha = .91$ (Appearance), $\alpha = .87$ and $\alpha = .91$ (Weight), and $\alpha = .83$ and $\alpha = .68$ (Attribution). The intraclass correlation (ICC) among boys for the intervention and the control group respectively was .72 and .68 (Appearance), .61 and .68 (Weight), and .33 and .60 (Attribution). Among girls, for the intervention and control group respectively, ICC = .84 and .89 (Appearance), .83 and .87 (Weight), and .82 and .62 (Attribution).

Eating Disorder Inventory (EDI)-Body Dissatisfaction Scale.

The EDI Body Dissatisfaction Scale was used to assess overall body dissatisfaction (Garner, 2004). The nine items are scored on a 6-point scale ranging from "0 = never" to "5 = always," with higher scores indicating greater body dissatisfaction. Separate scales were used for boys and girls (Richardson, Paxton, & Thomson, 2009). The EDI Body Dissatisfaction Scale has been shown to have good reliability and validity in studies of adolescents (Richardson & Paxton, 2010). In this sample, $\alpha = .76$ for the boys and $\alpha = .86$ for the girls. Among boys, in the intervention and the control group respectively, ICC = .54 and .40. Among girls, in the intervention and control group respectively, ICC = .84 and .89.

Physical Appearance Comparison Scale (PACS).

The PACS (Thompson, Heinberg, & Tantleff-Dunn, 1991) was used to assess tendencies to compare one's physical appearance to others. The scale includes five items scored on a 5-point scale ranging from "1 = never" to "5 = always," with higher scores indicating higher comparison tendencies. An example item is "At parties and other social events, I compare my physical appearance to the physical appearance of others." The version used in this study (omitting the reversed item) has been previously shown to have good internal reliability with adolescents (Richardson & Paxton, 2010) and validity (Thompson, Fabian, Moulton, Dunn & Altabe, 1991). Among boys, Cronbach's alpha for the current study was $\alpha = .87$, with ICC = .36 in the intervention group and .76 in the control group. Among girls, $\alpha = .80$, with ICC = .83 in the intervention group and .73 in the control group.

Satisfaction Survey. In addition, participants completed a 9-item satisfaction survey at the end of the intervention that queried as to how interesting they found the site to be, whether they found the site easy to navigate, how much they liked the design, content, and graphics, how well they understood the content, whether the site motivated them to work on their health goals, and how much they liked each of the aspects of the program (e.g., quizzes, games, videos, articles). Each question was asked on a 1–9 scale, from "not at all" to "extremely" with the appropriate terms specific to the question (e.g., 1 = "not at all interesting" to 9 = "extremely interesting;" 1 = "not at all motivating" to 9 = "extremely motivating," etc.).

Data Analysis

All analyses were conducted separately among girls and boys. Potential baseline differences between control and intervention groups were examined using *t*-tests. Intervention effects and maintenance effects were analyzed separately, in line with previous Internet prevention research (Jacobi et al., 2007), to account for

Table 1
Means and standard deviations for male participants on the outcome measures, by condition.

Measure	T1		T2		F (pre–post)	η_p^2	T3		F (pre–3 months)	η_p^2
	M	SD	M	SD			M	SD		
BES – Appearance					$F(1, 52) = 0.04, p = .84$.00			$F(1, 34) = 0.17, p = .91$.00
Intervention	2.66	0.66	2.56	0.70			2.70	0.81		
Control	2.82	0.73	2.67	0.71			2.72	0.88		
BES – Weight					$F(1, 52) = 0.39, p = .53$.00			$F(1, 34) = 0.13, p = .72$.00
Intervention	2.74	0.96	2.56	0.92			2.65	0.97		
Control	2.67	0.78	2.71	0.86			2.61	1.03		
BES – Attribution					$F(1, 52) = 2.62, p = .11$.05			$F(1, 34) = 0.71, p = .40$.02
Intervention	2.51	0.77	2.22	0.84			2.60	0.78		
Control	2.25	1.06	2.29	0.95			1.95	0.81		
EDI – Body Dissatisfaction					$F(1, 49) = 0.19, p = .66$.00			$F(1, 33) = 2.12, p = .15$.06
Intervention	5.26	3.82	4.25	3.89			4.00	3.21		
Control	4.38	3.78	4.24	4.43			6.00	5.77		
Physical Appearance Comparison					$F(1, 50) = 1.35, p = .25$.03			$F(1, 32) = 2.09, p = .16$.06
Intervention	11.6	5.14	10.9	5.13			10.95	3.42		
Control	9.23	4.16	9.40	5.05			10.54	4.29		

power limitations due to drop-out rates. Intervention effects were explored on an intent-to-treat basis, using 2×2 mixed-model ANOVAs, with the respective outcome variable as the dependent variable, group (i.e., intervention or control) as the between-subject factor, and time (pre-test to post-test) as the within subject factor. Maintenance effects were explored using pre-test to 3-month follow-up mixed-model ANOVAs. A further set of $2 \times 2 \times 2$ mixed model ANOVAs were conducted among each gender separately, to explore the moderating effect of overweight status, ethnic minority status, and high body dissatisfaction (median split) on the effect of the intervention. Effect sizes were estimated using partial eta square (η_p^2). Cohen's (1988) guidelines for eta square can be extended to partial eta square with .01–.05 indicating a small effect, .06–.13 indicating a moderate effect, and large effects lying above .13. Data analysis was conducted using SPSS 20.0 for Windows.

Results

No significant group differences were found on baseline and demographic measures. Complete data were available for 125 (86 girls and 39 boys) out of 178 enrolled participants (70%). Results indicated no significant differences between the intervention and control groups on any measure for boys ($ps > .05$), as seen in Table 1. However, significant Group \times Time (pre- to post) interactions were found on several of the body image measures for girls (as seen in Table 2). Specifically, results from the interaction indicated that mean scores on the BES Appearance subscale increased for the intervention group, relative to the controls, indicating greater body esteem related to appearance at post-test than at pre-test for the *BodiMojo* group, $F(1, 88) = 4.89, p < .05, \eta_p^2 = .05$ (small effect). The other two subscales of the BES did not differ significantly between the two groups, $F(1, 88) = 1.02, p = .33, \eta_p^2 = .01$, and $F(1, 52) = 2.62, p = .11, \eta_p^2 = .03$. A significant Group \times Time interaction was also found for the body dissatisfaction subscale of the EDI, $F(1, 87) = 4.41, p < .05, \eta_p^2 = .04$ (small effect), indicating a greater decrease in mean body dissatisfaction scores in the intervention group. Additionally, girls participating in the intervention condition reported a greater decrease in mean PACS scores relative to the controls from pre-test to post-test, $F(1, 86) = 5.44, p < .05, \eta_p^2 = .06$ (moderate effect). Overall, girls in the intervention condition improved their body image relative to those in the control condition between pre- and post-intervention. Although these effects remained in the predicted

direction, they were not significant at the 3-month assessment point ($ps > .05$).

Moderation analyses revealed a significant Group \times Time \times Overweight status interaction for body dissatisfaction among girls, with overweight girls reporting greater decreases in body dissatisfaction, $p = .012, \eta_p^2 = .15$ (large effect). However, overweight status was not a moderator for boys, nor were significant interactions found for any other measure among girls. Among girls, there was a significant Group \times Time \times Ethnic minority status interaction for the BES Appearance subscale, $p = .004, \eta_p^2 = .14$ (large effect), and EDI Body Dissatisfaction Scale, $p = .029, \eta_p^2 = .10$ (moderate effect), with ethnic minority girls reporting greater increases in body appearance esteem and greater decreases in body dissatisfaction. There was no significant 3-way interaction among boys. Regarding high-risk body dissatisfaction, among girls, a significant Group \times Time \times Body Dissatisfaction Risk interaction was found for the EDI Body Dissatisfaction Scale, $p = .000, \eta_p^2 = .23$ (large effect), with girls in the high body dissatisfaction group reporting greater decreases in body dissatisfaction following the intervention. Among boys, findings revealed a significant Group \times Time \times Body Dissatisfaction Risk interaction for body dissatisfaction, $p = .032, \eta_p^2 = .17$ (large effect), with boys in the high-risk body dissatisfaction group reporting greater decreases in body dissatisfaction.

Results from the satisfaction survey indicated overall positive responses to the program. For example, participants gave high ratings to ease of content comprehension ($M = 7.56$) and navigation ($M = 7.33$) on the 1–9 scale. Program features with the highest satisfaction ratings included physical activity tracking, quizzes and games, and the teen health search engine.

Discussion

BodiMojo is an Internet-based program promoting health behavior change through technology and social engagement that provides specialized body image and related content (e.g., nutrition, physical activity) for adolescents. Findings revealed that *BodiMojo* both decreased body dissatisfaction and increased appearance satisfaction and body esteem among girls, although the comparative effects were modest. Increasing appearance satisfaction via an Internet-based program in a short-term intervention is important because such a program can address issues of scalability and

Table 2

Means and standard deviations for female participants on the outcome measures, by condition.

Measure	T1		T2		F (pre-post)	η_p^2	T3		F (pre-3 months)	η_p^2
	M	SD	M	SD			M	SD		
BES – Appearance										
Intervention	2.51	0.84	2.70	0.85	F(1, 88) = 4.89, $p < .05$	.05	2.58	0.86	F(1, 75) = 0.00, $p = .95$	.00
Control	2.54	0.93	2.55	0.87			2.55	1.01		
BES – Weight										
Intervention	2.35	1.01	2.56	0.95	F(1, 88) = 1.02, $p = .33$	.01	2.58	0.96	F(1, 75) = 0.78, $p = .38$	.01
Control	2.24	0.96	2.41	1.02			2.34	1.11		
BES – Attribution										
Intervention	2.41	0.75	2.35	0.81	F(1, 88) = 2.95, $p = .10$	.03	2.39	0.83	F(1, 75) = 1.89, $p = .18$	.02
Control	2.22	0.65	2.40	0.59			2.42	0.59		
EDI – Body Dissatisfaction										
Intervention	6.54	5.28	4.96	4.47	F(1, 87) = 4.41, $p < .05$	.04	5.22	4.78	F(1, 74) = 1.24, $p = .27$	.02
Control	7.02	6.22	6.44	5.96			6.86	6.82		
Physical Appearance Comparison										
Intervention	11.27	3.84	10.13	3.47	F(1, 86) = 5.44, $p < .05$	.06	10.02	4.53	F(1, 73) = 0.35, $p = .56$	.00
Control	10.57	4.91	10.72	4.80			9.91	4.37		

sustainability. However, the lack of maintenance effects suggests a continued focus may be needed to sustain short-term effects.

Among adolescent girls, *BodiMojo* was successful in decreasing appearance comparison. It is possible that the program emphasis in written and video and interactive content on “appreciating what you have rather than comparing yourself to others” may have played a role in decreasing body comparisons with peers. Other interventions have successfully decreased body comparisons by highlighting how engaging in them sustains body dissatisfaction (Heinicke, Paxton, McLean, & Wertheim, 2007). Such comparisons have been shown to be predictive of eating disorder behaviors over time in adolescent girls (Thompson, Shroff, Herbozo, Cafri, Rodriguez, & Rodriguez, 2007), which makes them an important intervention target.

Our findings also revealed an impact of ethnic minority status, high baseline levels of body dissatisfaction, as well as to some extent BMI category, on the effects of the intervention among girls. Girls with high initial levels of body dissatisfaction, as well as those who were overweight, reported the greatest improvements in body dissatisfaction. These findings regarding greater improvement for high-risk participants are in line with previous studies (Stice et al., 2007; Wilksch et al., 2008). Ethnic minority girls reported greater improvement in appearance-related body esteem and body dissatisfaction compared to White participants. This is a unique finding and may be due to the inclusion of culturally relevant content in the program. Moreover, findings from the moderation analyses demonstrated large effect sizes, suggesting that the program may be helpful for particular groups.

As reported previously (McCabe, Ricciardelli, & Karantzas, 2010), changing body image in boys is difficult. Although *BodiMojo* was developed with input from adolescent boys, it is possible that the program failed to engage them in the body image content. Review of the satisfaction survey indicated that girls responded to most of the questions more positively than boys. Boys indicated more interest in games and earning points for prizes in the satisfaction survey, suggesting that a different technology approach should be considered in engaging them. To date the research findings have been mixed with boys, with one program finding no intervention effects (McCabe et al., 2010) and another reporting positive effects for body image with high school boys using a weekly 10-session school-based program (Jáuregui Lobera et al., 2010). Additional research is needed to better understand how to engage boys in body

image interventions and to address muscularity concerns (Rodgers, Ganchou, Franko & Chabrol, 2012).

The study results were not maintained at the 3-month follow-up, a challenge for many interventions once the prevention program has ended (Neumark-Sztainer, Paxton, Hannan, Haines & Story, 2006). The relatively short duration of the program may not have been adequate to sustain the increase in body satisfaction given the myriad of other daily influences experienced by girls, e.g., media exposure and peer pressure. It would be interesting to examine particular strategies to sustain engagement, for example, using *BodiMojo* across the entire high school experience, providing additional communications over time (e.g., e-mails, text messages or alerts), or integrating *BodiMojo* into existing curricula.

Limitations of the current study include the relatively small sample size, which likely reduced the power to detect group differences, the randomization of conditions within schools that may have resulted in spillover effects, and the brief follow-up period. Furthermore, the anthropomorphic assessments within a school context may have unintentionally made weight and shape more salient. Effect sizes were generally small, raising the question of clinical versus statistical significance; however, several moderator analyses demonstrated larger effect sizes suggesting that the program may be helpful to specific groups.



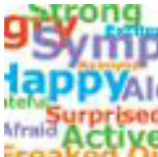
Overall, *BodiMojo* provides an Internet-based resource that may serve to promote positive body image for girls in the short-term. However, more research is needed to develop effective body image promotion programs for adolescents, particularly boys, and to sustain body image improvements over time as they transition to young adulthood.


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Appendix A.

BodiMojo program content

Intervention	Lesson module	Interactive tools	Theory & educational approaches
Session 1 	Goal Setting	Students register for the site, select two lifestyle goals in the areas of fitness, nutrition and wellness and set dates to achieve the goals and set up email reminders.	CTE TMC HBM
	Fitness	BodiMojo Snapshot = Personalized Fitness Assessment (18 items) with Tailored Feedback <ul style="list-style-type: none"> • My Fitness Outlook • My Activity Habits <u>Interactive Tools</u> Physical Activity Calculator Gulp-O-Meter Calculator BMI Calculator (Adolescent Version) <u>Health Articles</u> Choose 1 fitness article by expert, 1 article by teens (e.g., “Find a Workout Buddy”; “Music to Drive Your Workout”) <u>Optional Quizzes</u> Mental Weightlifting: What’s Your Exercise IQ? What’s Your Workout Personality?	SLT RAPB DEV ED
Session 2 	Goal Setting	Update goal status and receive goal feedback (e.g., “Try again, every day is a new day!”)	CTE TMC HBM
	Nutrition	BodiMojo Snapshot = Personalized Nutrition Assessments (26 items) with Tailored Feedback <ul style="list-style-type: none"> • Eating Habits • Snack Attacks! • Food For Thought • Getting Your Day Started (Breakfast) <u>Interactive Tools</u> Portion Your Plate Fast Food City game Gulp-O-Meter Calculator <u>Health Articles</u> Choose 1 nutrition article by expert, 1 article by teen (e.g., “Is obesity inherited?” “Hydration: Too little? Too much?”; “Family Meals”) <u>Optional Quiz</u> Food For Thought: Do you Eat Mindfully—Or Mindlessly?	SLT RAPB DEV ED
Session 3 	Goal Setting	Update goal status and receive goal feedback	CTE TMC HBM
	Body Image/Eating Issues	BodiMojo Snapshot = Personalized Body Image Assessments (27 items) with Tailored Feedback <ul style="list-style-type: none"> • What’s Your Boditude? • Body Check <u>Interactive Tools</u> Teen Body Talk Mood Cloud <u>Health Articles</u> Choose 1 body image article by expert, in article by teen (e.g., “Feel Better About Your Body”; “Genetics and Body Shape”; “Portraying Yourself on the Internet”) <u>Optional Quizzes</u> Are You At Risk for an Eating Disorder? Looks Don’t Matter—Or Do They? Tune In or Tune out: Are You Media Savvy?	SLT RAPB DEV ED

Intervention	Lesson module	Interactive tools	Theory & educational approaches
Session 4	Stress & Wellness	Update goal status and receive goal feedback	CTE TMC
		BodiMojo Snapshot = Personalized Stress Assessments (44 items) with Tailored Feedback <ul style="list-style-type: none"> • How Stressed Are You? (Daily Hassles) <u>Interactive Tools</u> Headspin! (Teen Brain & Body Changes) <u>Health Articles</u> Choose 1 stress article by expert, 1 article by teen (e.g., “The Teen Brain;” “Stressed? Breathe!”) <u>Optional Quizzes</u> How Optimistic Are You? Texting: When Is It Too Much?	SLT RAPB DEV ED
Across All Sessions		Daily Mojo (positive affirmations) Videos By Teens Join a Community Find a Friend Tag “Faves”	SLT HBM

Key: Computer-Tailored Education, CTE; Transtheoretical Model of Change, TMC; Social Learning Theory, SLT; Theory of Reasoned Action and Planned Behavior, RAPB; Health Belief Model, HBM; Developmental Psychology, DEV; Health Education, ED.

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