



Published in final edited form as:

Body Image. 2011 March ; 8(2): 143–148. doi:10.1016/j.bodyim.2010.12.005.

Heterosocial Involvement, Peer Pressure for Thinness, and Body Dissatisfaction among Young Adolescent Girls

Dawn M. Gondoli,

Department of Psychology, University of Notre Dame

Alexandra F. Corning,

Department of Psychology, University of Notre Dame

Elizabeth H. Blodgett Salafia,

Department of Psychology, University of Notre Dame, Department of Human Development and Family Science at North Dakota State University

Michaela M. Bucchianeri, and

Department of Psychology, University of Notre Dame

Ellen E. Fitzsimmons

Department of Psychology, University of Notre Dame, Department of Psychology, University of North Carolina – Chapel Hill

Abstract

The purpose of this study was to examine longitudinal connections among young adolescent heterosocial involvement (i.e., mixed-sex interactions), peer pressure for thinness, and body dissatisfaction. Three years of self-report questionnaire data were collected from 88 adolescent girls as they completed 6th through 8th grades. Results indicated that the relation between heterosocial involvement and body dissatisfaction was mediated by perceived peer pressure for thinness. Within this model, heterosocial involvement was associated with greater peer pressure for thinness. In turn, peer pressure for thinness was associated with greater body dissatisfaction. Results are discussed in terms of their implications for prevention and intervention efforts aimed at girls during their middle-school years.

Keywords

Mixed-Sex Interactions; Peer Relations; Adolescence; Girls; Body Image; Body Dissatisfaction

Mixed-sex interactions, collectively referred to as “heterosocial involvement,” increase in frequency and salience during early adolescence, when girls and boys combine their respective same-sex friendship groups (Connolly, Furman, & Konarski, 2000). Activities such as school functions, boy-girl parties, and casual meetings give young adolescents opportunities to socialize in a mixed-sex environment while maintaining proximity to same-

© 2010 Elsevier Ltd. All rights reserved.

Correspondence concerning this article should be addressed to Dawn M. Gondoli, 118 Haggard Hall, Department of Psychology, University of Notre Dame, Notre Dame, IN, 46556. dgondoli@nd.edu.

Publisher's Disclaimer: This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final citable form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

sex friends. These activities are more common during early adolescence than is one-on-one dating, and appear to serve as a bridge to the romantic partner relationships more characteristic of later adolescence (Connolly & Goldberg, 1999).

Within the mixed-sex context, young adolescents experience attraction, learn about their own and others' appeal, and have opportunities for sustained interactions with cross-sex peers. Although these outcomes can be developmentally appropriate, heterosocial involvement may present risks as well (Furman, Ho, & Low, 2007). Most relevant to the present study, heterosocial involvement has been positively associated with body dissatisfaction and unhealthy weight-management practices among adolescent girls (Cauffman & Steinberg, 1996; Compian, Gowen, & Hayward, 2004; Gralen, Levine, Smolak, & Murnen, 1990; Levine, Smolak, Moodey, Shuman, & Hessen, 1994; Smolak, Levine, & Gralen, 1993), indicating that mixed-sex interactions may somehow escalate girls' body-related concerns.

The association between heterosocial involvement and body dissatisfaction has been interpreted as arising from the stress of concomitant biological and social transitions during early adolescence (Cauffman & Steinberg, 1996; Compian et al., 2004; Gralen et al., 1990; Levine et al., 1994; Smolak et al., 1993). However, analyses linking heterosocial involvement to body dissatisfaction via intervening mechanisms have been absent. Although there is consensus that heterosocial involvement is correlated with girls' body dissatisfaction, there are no data illustrating how this association may arise. In the present study, we address this important gap by examining whether one potential mediator, peer pressure for thinness, underlies the relation between heterosocial involvement and body dissatisfaction.

Perceived Peer Pressure for Thinness as a Mediator

In order for peer pressure for thinness to function as a mediator, it must be associated with both heterosocial involvement and body dissatisfaction. Turning to the first relation, no prior studies have examined the heterosocial involvement and peer pressure for thinness correlation. Nevertheless, findings from several literatures support our hypothesis that heterosocial involvement is positively associated with perceived peer pressure for thinness.

One purpose of heterosocial involvement is to provide adolescents with information about perceived attractiveness and probable success in dating (Connolly et al., 2000). Because young adolescents lack dating experience, they rely on sociocultural norms to guide initial behavior and attributions in the heterosocial context (Laursen & Jensen-Campbell, 1999). Regarding a desirable female appearance, the norms upon which adolescents are likely to rely emphasize thinness as attractive and as a prerequisite for appeal (Smolak, Levine & Thompson, 2001; Thompson, Heinberg, Altabe, & Tantleff-Dunn, 1999).

In fact, adolescent girls endorse the beliefs that a girl's thinness is an important factor in determining her attractiveness, popularity with boys, and dating success (Paxton, Norris, Wertheim, Durkin, & Anderson, 2005; Wertheim, Paxton, Schutz, & Muir, 1997). Adolescent boys also report that a girl's slimness predicts her perceived attractiveness and dating potential (Paxton et al., 2005). Such perceptions appear grounded in reality, as higher weight among adolescent girls lowers the probability of them ever having dated or having dated recently, even among non-obese girls (Halpern, Udry, Campbell, & Suchindran, 1999). Thus, via implicit norms and observable dating patterns, the heterosocial context is likely to contain the message that thinness is a valued attribute. Girls who spend time in emergent heterosocial activities therefore experience an additional social context in which to learn that thinness is important.

Furthermore, because the heterosocial context is highly appearance-focused, body- and thinness-related conversations and comparisons are likely to increase among girls as heterosocial involvement escalates in the young adolescent cohort. Consistent with prior findings, we contend that repeated peer interactions and comparisons about thinness are perceived by girls as peer pressure for thinness (e.g., Hutchinson, Rapee, & Taylor, 2009; Keery, van den Berg, & Thompson, 2004; McCabe & Ricciardelli, 2001; Paxton, Schutz, Wertheim, & Muir, 1999; Shisslak et al., 1999). Thus, it is reasonable to expect that increased heterosocial involvement would predict increased perceived peer pressure for thinness. In turn, peer pressure for thinness is likely to be associated with body dissatisfaction, the second link in our mediated effects view.

Several cross-sectional studies have indeed revealed a positive association between perceived peer pressure for thinness and body dissatisfaction among adolescent girls (e.g., Hutchinson et al., 2009; Jones & Crawford, 2006; Kichler & Crowther, 2009; Lieberman, Gauvin, Bukowski, & White, 2001; Shroff & Thompson, 2006). The relation between peer pressure for thinness and body dissatisfaction has been interpreted as reflecting exposure to the “thin ideal” and subsequent internalization of the message that one’s current body size or shape is unacceptable. We are aware of only one longitudinal study that examined relations between perceived pressures to be thin from various sources and body dissatisfaction among adolescent girls and boys aged 16 to 19 (Presnell, Bearman, & Stice, 2004). Most relevant to the present study, univariate analyses revealed that peer pressure for thinness predicted increases in body dissatisfaction over a 9-month period. However, peer pressure for thinness was no longer a significant predictor of body dissatisfaction once additional predictors such as body mass were considered in multivariate analyses. According to Presnell et al. (2004), the relatively brief follow-up period in their study might have constrained change in body dissatisfaction, making it difficult for sociocultural variables, such as peer pressure, to account for variation in this change. Clearly, additional longitudinal studies linking peer pressure for thinness to change in body dissatisfaction should be undertaken.

The Present Study

In this study, we tested a longitudinal model in which the connection between heterosocial involvement and increased body dissatisfaction was mediated by increased peer pressure to be thin. We examined this model in a sample of young adolescent girls. Following guidelines for testing longitudinal mediation (Cole & Maxwell, 2003), we measured all variables at all time points. Because body dissatisfaction has been associated with Body Mass Index (BMI; e.g., Jones, Vigfusdottir, & Lee, 2004), we also evaluated our hypothesized model while controlling for girls’ BMIs.

Method

Participants

Data were collected annually from 88 girls as they completed 6th through 8th grade. At the 6th-grade assessment, the participants were between the ages of 11 and 13 ($M = 11.60$, $SD = .54$). Most identified as European American (98%); fewer identified as Latina (1%) or Native American (1%). The annual household income per family ranged from \$10,000 to \$450,000 ($Mdn = \$71,500$, $M = \$91,328$, $SD = \$71,653$). Their families had an average of 2.5 children, and most of the participants’ parents were married and living together (92%).

The present data were collected as part of a larger study focusing on the transitions that occur during adolescence. Initial contact letters were distributed to 4th-grade students through primary schools in a medium-sized, Midwestern city. The letter briefly described the study and instructed mothers of 4th-graders to call the research office if interested in

participating. To control for prior parenting experience, mother-child dyads were eligible if the 4th-grader was the oldest child in the family. Mothers were informed that the general purpose of the study was to better understand maternal and child adjustment during the transition to adolescence and that they and their children would be asked questions about maternal and child well-being, parenting, and peer relations; body dissatisfaction was not listed as a specific area of inquiry.

As noted, the present analyses focused on girls as they completed grades 6 through 8. These time points were selected for both conceptual and pragmatic reasons. Prior evidence indicates that heterosocial involvement, peer pressure for thinness, and body dissatisfaction increase during the middle-school years, and also show greater variability during this time as compared with late-childhood (Clark & Tiggemann, 2007, 2008; Connolly et al., 2000; Rosenblum & Lewis, 1999; Wardle & Marsland, 1990). Therefore, our selected middle-school time period was most appropriate for our model. In addition, our analysis required that all variables were measured at three time points, and this condition was met during the 6th - 8th grade assessments.

Procedure

Each year, mothers and their children visited a university research laboratory for 2 hours to separately and independently complete questionnaire packets. As compensation, each dyad was paid \$50 at the 6th-grade assessment, with an increase in this rate by \$10 for each subsequent year; by the 8th-grade assessment, each dyad received \$70. All procedures were approved by a university committee for the protection of human research participants.

Measures

Heterosocial involvement—A 7-item measure of involvement in mixed-sex peer activities, the Heterosocial Involvement Scale (HSIS), was developed for this study. The HSIS is intended to assess the mixed-sex peer group activities typical of young adolescents, rather than the one-on-one dating behaviors and steady partner relationships common among older adolescents. Previous measures often have comprised one item, such as “Have you started dating?” or “Do you currently have a boyfriend?” and have used true-false or ordinal response scales (e.g., Gralen et al., 1990; Levine et al., 1994). Similar to more recent efforts (e.g., Compian et al., 2004), we assessed a range of activities and employed a 7-point response scale to assess the frequency of a range of heterosocial activities from 1 (*never*) to 7 (*once a day*), with higher scores indicating greater involvement. Sample items are “About how often do you meet up with a group of boys and girls and do something or go somewhere together?,” “About how often do you spend free time after school with a group of boys and girls?,” and “About how often do you go to parties, dances, or other social events where there are both boys and girls present?” Cronbach's alpha for the HSIS during the three study years ranged from .78 to .90.

Perceived pressure to be thin—The 7-item Peer Pressure to Be Thin Scale (PPTS) was developed for this study. Items were drawn from the McKnight Risk Factor Survey which assesses risk and protective factors for disordered eating in adolescent girls and which also emphasizes sociocultural factors (Shisslak et al., 1999). The goal of item selection was to include items assessing the interpersonal pressure to be thin that one perceives from peers. Sample items are “Is it important to your friends that you be thin?,” “How often have you changed your eating when you were around your friends?,” and “How often have you compared yourself to your peers and thought that you needed to lose weight?” Each item was rated on a 6-point scale ranging from 0 (*never*) to 5 (*always*), with higher scores indicating greater perceived pressure to be thin. In a separate community sample of girls in 7th and 8th grades (Corning, Gondoli, Bucchianeri, & Blodgett-Salafia, in press), the PPTS

was significantly correlated ($r = .72$) with the Perceived Sociocultural Pressure Scale (Stice & Agras, 1998). Across the three years of the current study, Cronbach's alpha for the PPTS ranged from .80 to .84.

Body dissatisfaction—The 9-item Body Dissatisfaction subscale of the EDI (Garner, Olmstead, & Polivy, 1983) was used to assess “the belief that specific parts of the body associated with shape change or increased ‘fatness’ are too large (e.g., hips, thighs, buttocks)” (p. 18). An example item is, “I think that my hips are too large.” Respondents indicate the frequency of their endorsement of each statement using a 6–point scale ranging from 0 (*never*) to 5 (*always*), with high scores indicating greater body dissatisfaction. The Body Dissatisfaction subscale has been widely used in samples of adolescents, and validity and reliability are well-established (e.g., Shroff & Thompson, 2006; Jones et al., 2004; Shore & Porter, 1990). In the present study, Cronbach's alpha ranged from .92 to .93 across the three years of assessment.

Body Mass Index (BMI)—To obtain participants' BMIs, research assistants measured the height and weight of the adolescent girls in a private room. BMI was then calculated for each participant (weight [kg] / height [m²]).

Results

Descriptive Statistics and Preliminary Analyses

Intercorrelations, means, and standard deviations for the study variables are reported in Table 1. The correlations between the model variables were statistically significant and in the expected directions. The across-time correlations within variables indicated moderate rank-order stability.

Model Testing

The process of model testing included examination of a particular mediated effects model in which heterosocial involvement in 6th grade predicted heightened perception of peer pressure to be thin in 7th grade, which in turn predicted increased body dissatisfaction in 8th grade. The Mplus 4.0 program was used to estimate relations among the study variables and derive model fit (Muthén & Muthén, 2006). The significance of the standardized path coefficients was determined by comparing the t -ratio to a critical $t_{(.05)}$ of 1.96. Model fit was assessed with the chi-square statistic and the Comparative Fit Index (CFI). Models that provide a good fit to the data have non-significant ($p > .05$) chi-square values and CFIs greater than .95 (Hu & Bentler, 1999). The PRODCLIN program (MacKinnon, Fritz, Williams, & Lockwood, 2007) was used to evaluate the significance of the specific indirect effect between heterosocial involvement, peer pressure to be thin, and body dissatisfaction. This program calculates the confidence intervals for the indirect effect. A confidence interval that does not contain zero indicates (1) that the indirect effect is significant; (2) that the independent variable therefore has some effect on the dependent variable; and (3) that mediation has occurred. Our method of assessing and interpreting mediation within a longitudinal model follows the current guidelines provided by statistical methodologists (Judd & Kenny, 2010; MacKinnon & Fairchild, 2009; Shrout & Bolger, 2002).

Hypothesized mediation model—Results indicated that model fit was good ($\chi^2(14) = 22.67$, $p = .07$; CFI = .98) and virtually all path coefficients were significant ($ps < .05$) and in the expected directions (see Figure 1). Results also indicated that the indirect effect between heterosocial involvement in 6th grade, peer pressure to be thin in 7th grade, and body dissatisfaction in 8th grade was significant, as the confidence intervals associated with these estimates did not contain zero (.00047, .07558). The significant indirect effect

suggested that higher levels of heterosocial involvement in 6th grade led to greater perceived peer pressure to be thin in 7th grade, which in turn predicted higher levels of subsequent body dissatisfaction in 8th grade.

Model controlling for BMI—The model was subsequently re-tested while controlling for BMI. New paths were included between BMI in 6th grade and peer pressure and body dissatisfaction in 7th grade and between BMI in 7th grade and peer pressure and body dissatisfaction in 8th grade. All previously significant model paths remained significant when BMI was considered and the model continued to fit well ($\chi^2(28) = 31.96, p = .28$; CFI = .995). The paths between prior BMI in 6th and 7th grade and subsequent peer pressure to be thin in 7th and 8th grade were not significant. BMI in 6th grade and body dissatisfaction in 7th grade were significantly related ($\gamma = .30$) as were BMI in 7th grade and body dissatisfaction in 8th grade ($\gamma = .15$). Additional information about the model including BMI is available from the authors.

Discussion

The current study aimed to enhance our understanding of selected peer factors in body dissatisfaction in a sample of young adolescent girls. We found that heterosocial involvement and body dissatisfaction were associated over time via a mediating variable, perceived peer pressure to be thin. As hypothesized, heterosocial involvement was associated with increased peer pressure to be thin. In turn, peer pressure to be thin was associated with increased body dissatisfaction.

To our knowledge, this is the first study to investigate the connection between heterosocial involvement and increased peer pressure to be thin. In interpreting the association, we theorize that heterosocial involvement makes attractiveness highly salient. According to an evolutionary perspective, comparisons related to how attractive one is to the other sex occur routinely within human social groups (Gilbert, Price, & Allan, 1995), and boys and girls are thus likely to engage in such comparisons as they progress from the friendships of childhood to the sexually- and romantically-tinged relationships of early adolescence. As part of learning who is attractive and why, adolescents draw upon contemporary norms of attractiveness, and these norms emphasize female slimness as desirable (e.g., Paxton et al., 2005). Such norms may become explicit via body-related peer observations, comparisons, and conversations. In turn, these peer-group behaviors are likely to be experienced as peer pressure for thinness (e.g., Ata, Ludden, & Lally, 2007; Jones et al., 2004). Thus, increased heterosocial involvement may set in motion or amplify social processes which emphasize thinness, and which are internalized as pressure.

Consistent with previous efforts (e.g., Presnell et al., 2004), we found that peer pressure for thinness was associated with increased body dissatisfaction over time. The perception that thinness is desired or even required for acceptance within a key social group can be expected to lead to body dissatisfaction, particularly if the level of thinness is unrealistic (Thompson et al., 1999). However, exactly how pressure for thinness might lead to body dissatisfaction requires greater research attention. To uncover potential processes, future research could examine potential mediating or moderating variables of the peer pressure–body dissatisfaction linkage. For instance, perhaps pressure for thinness leads first to internalization of the thin ideal, and subsequently to body dissatisfaction (Wertheim, Paxton, & Blaney, 2009). The effect of peer pressure for thinness on body dissatisfaction might also be moderated by individual differences in the tendency to engage in appearance-related comparisons (Wertheim et al., 2009), or by concomitant pressures found within other contexts such as the family (Dunkley, Wertheim, & Paxton, 2001; Taylor et al., 1998). Although our findings indicate that peer pressure for thinness was associated with body

dissatisfaction for the sample as a whole, future research might present a more fine-grained analysis of circumstances under which peer pressure for thinness is especially likely to lead to body dissatisfaction.

Our results are notable as well because we specified a process by which heterosocial involvement is associated with body dissatisfaction. Prior literature in this area has been limited because it is primarily cross-sectional, and because no analyses of process have been undertaken. Rather, explanations for associations have been made only at the conceptual level. Although such explanations are helpful in generating testable hypotheses, it is important to move beyond documenting associations and speculating about mechanisms. Following our lead, future efforts in this area should focus on testing conceptually-grounded models with longitudinal data and more sophisticated techniques such as the analysis undertaken here.

In addition, future research on romantic involvement and body image should consider that findings may differ depending on the age groups and specific relationships studied. Romantic relationships are consistently associated with greater body dissatisfaction and disordered eating among young adolescent girls (e.g., Cauffman & Steinberg, 1996; Levine et al., 1994). In contrast, the connection between romantic relationships and body dissatisfaction among emerging adults is less straightforward (e.g., Forbes, Jobe, & Richardson, 2006; Markey & Markey, 2006; Tantleff-Dunn & Thompson, 1995; see also Thompson et al., 1999). Some studies indicate that romantic relationships are associated with lower body dissatisfaction among college women (Forbes et al., 2006), while others indicate that the longer women have been in romantic relationships, the more body dissatisfaction they experience (Markey & Markey, 2006). Furthermore, the longer women are in romantic relationships, the more likely they are to *incorrectly* believe that their partners want them to be thinner (Markey & Markey, 2006). Perhaps young adolescent romantic relationships create straightforward risk because adolescents draw upon clear, consistent, sociocultural messages about thinness as they initiate such relationships. In contrast, the sexual relationships of young adulthood present opportunities for enhancement of self- and body-esteem, yet also create possibilities for women to ruminate about partner preferences. Clearly, exactly how and why mixed-sex and romantic contexts might diminish or enhance body dissatisfaction among youth at different ages should be further explored.

Practical Implications

In regard to the implications of our findings, the notion that girls may be harmed by heterosocial relations is, unfortunately, a familiar idea. Prior research has indicated that relationships with boys may present risks to girls, whether girls' externalizing behaviors, depression, or body-related issues are considered (Cauffman & Steinberg, 1996; Compian et al., 2004; Furman et al., 2007; Gralen et al., 1990). We note, however, that romantic relationships also have been associated with positive outcomes among young adolescents, including the development of autonomy, identity, social competence, and perceptions of dyadic support, companionship, and intimacy (Furman et al., 2007). Clearly, adolescent heterosocial relations can present opportunities for growth as well as risk. To optimize development and minimize vulnerability within this context, adult guidance may be needed. More formally, girls may benefit from targeted prevention and intervention while on the cusp of heterosocial involvement. Indeed, our findings suggest a number of peer-focused directions for prevention and intervention during the middle-school years.

First, adults should redirect undue attention centered on weight, body shape, or eating, regardless of the peer setting in which such attention occurs (e.g., schools, casual or formal heterosocial gatherings). In addition, adolescent girls may benefit from interventions that examine both overt and subtle pressures for thinness found within peer settings (for

discussion, see Lieberman et al., 2001). Emerging interventions with feminist and ecological foci have been effective in educating girls about the pernicious effects of the media on body image (for a review, see Levine & Smolak, 2009), and we contend that girls also can learn how to conduct and regulate their own interactions and reactions within everyday social contexts so as to become resources, rather than risks, for each other. As part of examination and critique of appearance-focused socialization, girls can learn that repetitive focus and rumination upon weight and shape is detrimental to the self and others. Girls also can learn to recognize triggers of unfavorable behaviors that may occur in particular social environments including the heterosocial context, and can help each other resist negative behaviors when such triggers arise (Lieberman et al., 2001; Steiner-Adair, Sjostrom, Franko, Pai, Tucker, Becker, & Herzog, 2002).

Study Limitations and Contributions

It is important to consider the limitations of this study when interpreting the findings. First, our sample size, although appropriate for our analyses, was relatively small, and a larger sample would be preferable. Second, our sample was not ethnically or racially diverse, and therefore generalizability of our findings to minority groups is cautioned. Third, although our hypothesized model had a good fit to the data, there are other models that could be constructed, particularly those that include additional sociocultural pressures. Our intention was to conduct a process-oriented evaluation of one particular sociocultural domain of influence, yet our interpretations must be tempered by the recognition that body dissatisfaction is multiply determined (Thompson et al., 1999). Finally, although our longitudinal analysis provides evidence for temporal precedence, it is possible that an unmeasured causal variable actually accounted for increases in our measured constructs over time. This common, potential problem can be addressed with experimental or quasi-experimental approaches, including those afforded by intervention studies.

Limitations notwithstanding, this study does make a number of important contributions. We used a rigorous, longitudinal, model-testing approach to link constructs. Both heterosocial involvement and peer pressure for thinness have been associated with body dissatisfaction in separate studies, but this study is the first to examine connections between all three variables in the same analysis and to address a particular process over time. Our hypothesized model was both theoretically and empirically motivated and represents a synthesis of diverse literatures.

Our findings are consistent with the idea that heterosocial involvement, while normative, may not be innocuous when girls' body dissatisfaction is considered. The challenge going forward for both research and practice is to work toward helping girls transcend the risks that heterosocial involvement may incur and replace potential vulnerabilities with strengths.

Acknowledgments

This research was supported by grants awarded to Dawn M. Gondoli from the *Eunice Kennedy Shriver* National Institute of Child Health and Human Development (1R03HD041955-01 and 5R03HD041955-02), the University of Notre Dame Graduate School, and the University of Notre Dame College of Arts and Letters.

References

- Ata RN, Ludden AB, Lally MM. The effects of gender and family, friend, and media influences on eating behaviors and body image during adolescence. *Journal of Youth and Adolescence*. 2007; 36:1024–1037.
- Cauffman E, Steinberg L. Interactive effects of menarcheal status and dating on dieting and disordered eating among adolescent girls. *Developmental Psychology*. 1996; 32:631–635.

- Clark L, Tiggemann M. Sociocultural influences and body image in 9- to 12-year old girls: The role of appearance schemas. *Journal of Clinical Child and Adolescent Psychology*. 2007; 36:76–86. 1124–1134. [PubMed: 17206883]
- Clark L, Tiggemann M. Sociocultural and individual psychological predictors of body image in young girls: A prospective study. *Developmental Psychology*. 2008; 44:1124–1134. [PubMed: 18605839]
- Cole DA, Maxwell SE. Testing mediational models with longitudinal data: Questions and tips in the use of structural equation modeling. *Journal of Abnormal Psychology*. 2003; 112:558–577. [PubMed: 14674869]
- Compian L, Gowen LK, Hayward C. Peripubertal girls' romantic and platonic involvement with boys: Associations with body image and depression symptoms. *Journal of Research on Adolescence*. 2004; 14:23–47.
- Connolly J, Furman W, Konarski R. The role of peers in the emergence of heterosexual romantic relationships in adolescence. *Child Development*. 2000; 71:1395–1408. [PubMed: 11108103]
- Connolly, J.; Goldberg, A. Romantic relationships in adolescence: The role of friends and peers in their emergence and development. In: Furman, W.; Brown, BB.; Feiring, C., editors. *The development of romantic relationships in adolescence*. New York: Cambridge University Press; 1999. p. 266-290.
- Corning AF, Gondoli DM, Bucchianeri MM, Blodgett Salafia EH. Preventing the development of body issues in adolescent girls through intervention with their mothers. *Body Image*. in press.
- Dunkley TL, Wertheim EH, Paxton SJ. Examination of a model of multiple sociocultural influences on adolescent girls' body dissatisfaction and dietary restraint. *Adolescence*. 2001; 36:265–279. [PubMed: 11572305]
- Forbes GB, Jobe RL, Richardson RM. Associations between having a boyfriend and the body dissatisfaction of self-esteem of college women: An extension of the Loin and Kulik hypothesis. *The Journal of Social Psychology*. 2006; 146:381–384. [PubMed: 16783987]
- Furman, W.; Ho, MJ.; Low, SM. The rocky road of adolescent romantic experience: Dating and adjustment. In: Engels, RCME.; Kerr, M.; Stattin, H., editors. *Friends, lovers and groups: Key relationships in adolescence*. Chichester, West Sussex, England: 2007. p. 61-80.
- Garner DM, Olmstead MP, Polivy J. Development and validation of a multidimensional eating disorder inventory for anorexia nervosa and bulimia. *International Journal of Eating Disorders*. 1983; 2:15–34.
- Gilbert P, Price J, Allan S. Social comparison, social attractiveness, and evolution: How might they be related? *New Ideas in Psychology*. 1995; 13:149–165.
- Gralen SJ, Levine MP, Smolak L, Murnen SK. Dieting and disordered eating during early and middle adolescence: Do the influences remain the same? *International Journal of Eating Disorders*. 1990; 9:501–512.
- Halpern CT, Udry JR, Campbell B, Suchindran C. Effects of body fat on weight concerns, dating, and sexual activity: A longitudinal analysis of black and white adolescent girls. *Developmental Psychology*. 1999; 35:721–736. [PubMed: 10380863]
- Hu L, Bentler PM. Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling*. 1999; 6:1–55.
- Hutchinson DM, Rapee RM, Taylor A. Body dissatisfaction and eating disturbances in early adolescence: A structural modeling investigation examining negative affect and peer factors. *Journal of Early Adolescence*. 2009 published online.
- Jones CD, Crawford JK. The peer appearance culture during adolescence: Gender and body mass variations. *Journal of Youth and Adolescence*. 2006; 2:257–269.
- Jones DC, Vigfusdottir TH, Lee Y. Body image and the appearance culture among adolescent girls and boys: An examination of friend conversations, peer criticism, appearance magazines, and internalization of appearance ideals. *Journal of Adolescent Research*. 2004; 19:323–339.
- Judd, CM.; Kenny, A. Data analysis in social psychology: Recent and recurring issues. In: Fiske, ST.; Gilbert, DT.; Gardner, L., editors. *Handbook of social psychology*. 5th. NJ: John Wiley & Sons, Inc.; 2010.

- Keery H, van den Berg P, Thompson JK. An evaluation of the Tripartite Influence model of body dissatisfaction and eating disturbance with adolescent girls. *Body Image*. 2004; 1:237–251. [PubMed: 18089156]
- Kichler JC, Crowther JH. Young girls' eating attitudes and body image dissatisfaction. *Journal of Early Adolescence*. 2009; 29:212–232.
- Laursen, B.; Jensen-Campbell, LA. The nature and functions of social exchange in adolescent romantic relationships. In: Furman, W.; Brown, BB.; Feiring, C., editors. *The development of romantic relationships in adolescence*. New York: Cambridge University Press; 1999. p. 50-74.
- Levine, MP.; Smolak, L. Recent developments and promising directions in the prevention of negative body image and disordered eating in children and adolescents. In: Smolak, L.; Thompson, JK., editors. *Body image, eating disorders, and obesity in youth: Assessment, prevention, and treatment*. 2nd. Washington, DC: American Psychological Association; 2009. p. 215-239.
- Levine MP, Smolak L, Moodey AF, Shuman MD, Hessen LD. Normative developmental challenges and dieting and eating disturbances in middle school girls. *International Journal of Eating Disorders*. 1994; 15:11–20. [PubMed: 8124323]
- Lieberman M, Gauvin L, Bukowski WM, White DR. Interpersonal influence and disordered eating behaviors in adolescent girls: The role of peer modeling, social reinforcement, and body-related teasing. *Eating Behaviors*. 2001; 2:215–236. [PubMed: 15001032]
- MacKinnon DP, Fairchild AJ. Current directions in mediation analysis. *Psychological Science*. 2009; 18:16–20.
- MacKinnon DP, Fritz MS, Williams J, Lockwood CM. Distribution of the product confidence limits for the indirect effect: Program PRODCLIN. *Behavior Research Methods*. 2007; 39:384–389. [PubMed: 17958149]
- Markey CN, Markey PM. Romantic relationships and body satisfaction among young women. *Journal of Youth and Adolescence*. 2006; 35:271–279.
- McCabe MP, Ricciardelli LA. The structure of the perceived sociocultural influences on body image and body change questionnaire. *International Journal of Behavioral Medicine*. 2001; 8:19–41.
- Muthén, LK.; Muthén, BO. Mplus version 4.0. Los Angeles CA: Muthén & Muthén; 2006.
- Paxton SJ, Norris M, Wertheim EH, Durkin SJ, Anderson J. Body dissatisfaction, dating, and importance of thinness to attractiveness in adolescent girls. *Sex Roles*. 2005; 53:663–675.
- Paxton SJ, Schutz HK, Wertheim EH, Muir SL. Friendship clique and peer influences on body image concerns, dietary restraint, extreme weight-loss behaviors, and binge-eating in adolescent girls. *Journal of Abnormal Psychology*. 1999; 108:255–266. [PubMed: 10369035]
- Presnell K, Bearman SK, Stice E. Risk factors for body dissatisfaction in adolescent boys and girls: A prospective study. *International Journal of Eating Disorders*. 2004; 36:389–401. [PubMed: 15558645]
- Rosenblum GD, Lewis M. The relations among body image, physical attractiveness and body mass in adolescence. *Child Development*. 1999; 70:50–64. [PubMed: 10191514]
- Shisslak CM, Renger R, Sharpe T, Crago M, McKnight KM, Gray N, Bryson S, Estes LS, Parnby OG, Killen J, Taylor CB. Development and evaluation of the McKnight Risk Factor Survey for assessing potential risk and protective factors for disordered eating in preadolescent and adolescent girls. *International Journal of Eating Disorders*. 1999; 25:195–214. [PubMed: 10065397]
- Shore RA, Porter JE. Normative and reliability data for 11 to 18 year olds on the Eating Disorder Inventory. *International Journal of Eating Disorders*. 1990; 9:201–207.
- Shroff H, Thompson JK. Peer influences, body-image dissatisfaction, eating dysfunction and self-esteem in adolescent girls. *Journal of Health Psychology*. 2006; 11:533–551. [PubMed: 16769734]
- Shrout PE, Bolger N. Mediation in experimental and nonexperimental studies: New procedures and recommendations. *Psychological Methods*. 2002; 7:422–445. [PubMed: 12530702]
- Smolak L, Levine MP, Gralen S. The impact of puberty and dating on eating problems among middle school girls. *Journal of Youth and Adolescence*. 1993; 22:355–368.
- Smolak L, Levine MP, Thompson JK. The use of the Sociocultural Attitudes Towards Appearance Questionnaire with middle school boys and girls. *International Journal of Eating Disorders*. 2001; 29:216–223. [PubMed: 11429984]

- Steiner-Adair C, Sjostrom L, Franko DL, Pai S, Tucker R, Becker AE, Herzog DB. Primary prevention of risk factors for eating disorders in adolescent girls: Learning from practice. *International Journal of Eating Disorders*. 2002; 32:401–411. [PubMed: 12386905]
- Stice E, Agras WS. Predicting onset and cessation of bulimic pathology: A longitudinal grouping analysis. *Behavior Therapy*. 1998; 29:257–276.
- Tantleff-Dunn S, Thompson JK. Romantic partners and body image disturbance: Further evidence for the role of perceived-actual disparities. *Sex Roles*. 1995; 35:589–605.
- Taylor CB, Sharpe T, Shisslak C, Bryson S, Estes LS, Gray N, Killen JD. Factors associated with weight concerns in adolescent girls. *International Journal of Eating Disorders*. 1998; 24:31–42. [PubMed: 9589309]
- Thompson, JK.; Heinberg, L.J.; Altabe, M.; Tantleff-Dunn, S. *Exacting beauty: Theory, assessment, and treatment of body image disturbance*. Washington, DC: American Psychological Association; 1999.
- Wertheim, E.H.; Paxton, S.J.; Blaney, S. Body image in girls. In: Smolak, L.; Thompson, J.K., editors. *Body image, eating disorders, and obesity in youth: Assessment, prevention, and treatment*. 2nd. Washington, DC: American Psychological Association; 2009. p. 47-76.
- Wardle J, Marsland L. Adolescent concerns about weight and eating: A social-developmental perspective. *Journal of Psychosomatic Research*. 1990; 34:377–391. [PubMed: 2376839]
- Wertheim E.H., Paxton S.J., Schutz H.K., Muir S.L. Why do adolescent girls watch their weight? An interview study examining sociocultural pressures to be thin. *Journal of Psychosomatic Research*. 1997; 42:345–355. [PubMed: 9160274]

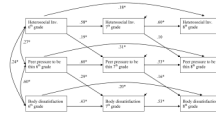


Figure 1. Hypothesized mediation model, with peer pressure to be thin in 7th grade serving as a mediator of the connection between heterosocial involvement in 6th grade and body dissatisfaction in 8th grade.
Note * $p < .05$. Error variances at concurrent time points are correlated but not depicted for ease of presentation.

Table 1
Means, Standard Deviations, and Intercorrelations of Study Variables

Variable	1	2	3	4	5	6	7	8	9	10	11	12
1. Heterosocial involvement in 6 th grade	---											
2. Heterosocial involvement in 7 th grade	.58*	---										
3. Heterosocial involvement in 8 th grade	.54*	.70*	---									
4. Peer pressure to be thin in 6 th grade	.27*	.29*	.21*	---								
5. Peer pressure to be thin in 7 th grade	.36*	.35*	.25*	.67*	---							
6. Peer pressure to be thin in 8 th grade	.37*	.38*	.38*	.65*	.77*	---						
7. Body dissatisfaction in 6 th grade	.24*	.25*	.20	.60*	.51*	.61*	---					
8. Body dissatisfaction in 7 th grade	.21*	.19	.25*	.54*	.63*	.63*	.63*	---				
9. Body dissatisfaction in 8 th grade	.24*	.21*	.19	.43*	.57*	.72*	.66*	.77*	---			
10. Body mass index in 6 th grade	.21*	.21*	.20	.33*	.25*	.33*	.52*	.53*	.52*	---		
11. Body mass index in 7 th grade	.17	.18	.19	.31*	.26*	.35*	.55*	.53*	.52*	.88*	---	
12. Body mass index in 8 th grade	.11	.19	.13	.27*	.22*	.28*	.48*	.48*	.49*	.84*	.94*	---
<i>M</i>	13.32	16.74	19.71	6.70	8.43	10.22	11.11	12.72	15.74	19.31	20.28	20.97
<i>SD</i>	6.38	7.86	9.40	5.63	6.12	6.94	10.29	10.23	11.43	4.17	4.19	4.35

Note

* $p < .05$.