

**A Longitudinal Study of Appearance-based Rejection Sensitivity
and the Peer Appearance Culture**

Author

Webb, Haley J, Zimmer-Gembeck, Melanie J

Published

2016

Journal Title

Journal of Applied Developmental Psychology

Version

Accepted Manuscript (AM)

DOI

[10.1016/j.appdev.2016.01.004](https://doi.org/10.1016/j.appdev.2016.01.004)

Rights statement

© 2016 Elsevier. Licensed under the Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International Licence (<http://creativecommons.org/licenses/by-nc-nd/4.0/>) which permits unrestricted, non-commercial use, distribution and reproduction in any medium, providing that the work is properly cited.

Downloaded from

<http://hdl.handle.net/10072/100088>

Griffith Research Online

<https://research-repository.griffith.edu.au>

Abstract

Drawing from theory that implicates the peer appearance culture in shaping adolescents' appearance concerns, we examined whether friends' reports of the appearance culture were associated with increases in emerging adolescents' appearance-based rejection sensitivity (appearance-RS) over six months. Gender and age differences were also assessed. We used peer nominations to identify dyadic friendships ($n = 178$ adolescents/89 dyads, $M_{\text{age}} = 12.0$), and unique friendship networks ($n = 284$, $M_{\text{age}} = 12.0$). Appearance-RS increased more over a 6-month period when adolescents had reciprocated best friends who reported more body change and extreme weight loss behaviours, and when they had a best friend with a higher BMI. This suggests that observable features of friends may be most relevant. Also, however, adolescents showed greater increases in appearance-RS when they belonged to a friendship group that reported higher appearance dissatisfaction, and adolescents showed less increases in appearance-RS when their friends reported more positive appearance self-perceptions.

Keywords: Appearance-based rejection sensitivity; body image; friendship; emerging adolescence; prospective

A Longitudinal Study of Appearance-based Rejection Sensitivity and the Peer Appearance Culture: The Role of Friends' Body Image, Dieting, and Weight

Physical appearance is a salient and central aspect of the day-to-day functioning of young people, with research demonstrating the importance of physical appearance in relation to self esteem, popularity, peer acceptance, and attractiveness to the opposite sex (Carey, Donaghue, & Broderick, 2011; Mooney, Farley, & Strugnell, 2009; Morin, Maiano, Marsh, Janosz, & Nagengast, 2011). Moreover, adolescents (and increasingly, children) are resorting to potentially problematic weight control behaviours in an attempt to modify the way they look (Gonsalves, Hawk, & Goodenow, 2014; Schur, Sanders, & Steiner, 2000). Worryingly, dieting and other weight management behaviours are thought to undermine the natural regulation of eating (i.e., “intuitive eating”; Moy, Petrie, Dockendorff, Greenleaf, & Martin, 2013), and tend to persist beyond adolescence into adulthood (Neumark-Sztainer, Wall, Larson, Eisenberg, & Loth, 2011).

Given that physical appearance concerns can be so central to adolescents' global self-worth and later positive development, it is not surprising that adolescents also are aware of how appearance can affect their popularity and acceptance, and friends and peers play important roles in shaping body image attitudes and concerns (Webb & Zimmer-Gembeck, 2014). One particular and important aspect of adolescent (and adult) body image and appearance-related concerns that has recently been identified is appearance-based rejection sensitivity (appearance-RS), defined as a cognitive affective processing system, which drives the tendency to anxiously expect, and readily perceive, cues of interpersonal rejection based on the way one looks (Park, 2007).

Appearance-RS shows parallels to more general anxiety-related social constructs, such as social-evaluative fears (Dryman & Heimberg, 2015). For example, there are similarities in terms of preoccupation with others' evaluations of self, expectation of negative evaluation, and interpretation biases. However, there are also key differences, whereby the central focus of appearance-RS is on

physical attributes, compared to the potential for social-evaluative fears around diverse aspects of self, including for example, intelligence and personality.

Appearance-RS is also distinct from conceptions of body image, which typically involve comparisons of self to others or to social norms, yet focus on negative thoughts and feelings about the body (Grogan, 2008). While body dissatisfaction tends to covary with body size (Presnell, Bearman, & Stice, 2003), appearance-RS does not (Webb et al., 2014). Appearance-RS involves negative thoughts and feelings about one's appearance (rather than one's body), and – most notably – appearance-RS explicitly relates these negative thoughts to fears about being accepted or rejected by others. Drawing from the broader construct of rejection sensitivity (from which appearance-RS was derived), a defining feature of appearance-RS is the anxiety, hypervigilance, over-reactions and maladaptive responses to ambiguous signs of appearance-based rejection that can bring about or contribute to the social rejection that is so feared (London, Downey, Bonica, & Paltin, 2007; Zimmer-Gembeck & Nesdale, 2013).

Appearance-RS has been shown to be elevated in a substantial proportion of adolescents (Bowker, Thomas, Spencer, & Park, 2013) and young adults (Park, DiRaddo, & Calogero, 2009), and has been found to be linked to symptoms of emotional problems and a range of social difficulties (Park, 2007; Park, Calogero, Young, & DiRaddo, 2010). Despite the knowledge that appearance-RS is detrimental to the health and well-being of adolescents, all of our understanding of why some young people become excessively concerned with social acceptance and rejection based on the way they look has occurred in only the past few years and has been based on cross-sectional research. For example, research by Webb, Zimmer-Gembeck, and Donovan (2014) has shown that elevated appearance-RS is linked with many aspects of appearance-salient peer interactions, such as teasing by peers about appearance, as well as youths' perceived pressure to conform to appearance ideals. However, finding such associations does not provide support for the expected temporal

associations of peer influences on increased appearance-RS over time. In addition to the lack of longitudinal research, all but two previous studies (see Bowker et al., 2013; Webb & Zimmer-Gembeck, 2015 for exceptions) have relied on self-report information to measure both perceived social pressures and appearance-RS. Thus, we addressed these limitations of past research by conducting a longitudinal study that allowed us to examine the temporal associations of friends' own reports of their appearance-related concerns and behaviours with emerging adolescents' self-reported appearance-RS over time.

Why Focus on the Peer Appearance Culture among Adolescent Friends?

The tripartite model proposes that three key sociocultural sources of pressure drive the onset and exacerbation of body dissatisfaction (Thompson et al., 1999). In particular, it is theorized that various messages and pressures from parents, peers and the media promote unhealthy attitudes and values about appearance ideals, and contribute to dissatisfaction with one's own appearance (Keery, van den Berg, & Thompson, 2004). While there is extensive evidence to support the role of each of these sociocultural sources in relation to body dissatisfaction (e.g., Keery et al., 2004; Tylka, 2011; van den Berg, Thompson, Obremski-Brandon, & Covert, 2002; Webb & Zimmer-Gembeck, 2014), and, to a lesser extent, in relation to appearance-RS (e.g., Park et al., 2009; Webb, Zimmer-Gembeck, Waters, Farrell, & Nesdale, in press), the present study focused in more depth on the friend and peer context in particular. Our rationale for this focus was a recognition that during adolescence intimacy and mutuality within friendships escalate rapidly, and friends become key socialising agents, on par with and eventually surpassing parents in their influence (Collins & Laursen, 2004; Collins & Steinberg, 2006; Rubin, Bukowski, & Parker, 2006). When considering the role of friends and peers in relation to adolescent appearance concerns specifically, Badaly (2013) demonstrated in a meta-analytic review that adolescents tend to show similarity to their peers in appearance concerns and related behaviours, including appearance dissatisfaction, disordered

eating, and weight control methods, and concluded that this was likely to be partly due to peer influence, as it was unlikely to be the sole result of cognitive bias or selection of similar friends. Moreover, prospective associations have been reported between perceived appearance-related pressures from peers (such as friends' modelling and appearance conversations) and concerns about appearance in adolescent girls (Helfert & Warschburger, 2011; Jones, 2004), and to a lesser extent in boys (Helfert & Warschburger, 2011). Notably, longitudinal studies are sparse, and findings are less consistent than for cross-sectional studies.

Why would Appearance-RS be an Outcome of the Peer Appearance Culture?

Appearance-RS theory draws together the pervasive human need to belong and be accepted by others with adolescents' (and adults') desire for physical attractiveness and awareness of how important appearance can be for social success. Research suggests that boys and girls more anxiously expect, and readily perceive, cues of interpersonal rejection based on the way they look when they are embedded within an 'appearance culture', where they are exposed to higher levels of appearance teasing, peer pressure to be attractive, and conversations about appearance within the social group (Webb et al., 2014). It is this greater exposure to a peer appearance culture (Jones, 2004) that is expected to account for heightened concerns about appearance-based rejection sometimes directly, but other times via the extent that the individual personally accepts ('internalises') widely-endorsed appearance ideals, and feels dissatisfied with their appearance (Park et al., 2009; Webb et al., 2014). In one previous cross-sectional study (Webb & Zimmer-Gembeck, 2015), for example, adolescents were similar to their best friends and to members of their close friendship group in their appearance-RS. Moreover, appearance-RS was higher in adolescents whose best friends reported higher levels of restrictive dieting and a sense of self worth as dependent on feeling attractive. Appearance-RS was also higher in adolescents whose friendship groups reported higher average levels of restrictive dieting, appearance-dependent self worth, and body

dissatisfaction, and had a lower BMI relative to other groups. These findings provided the first support for the theory of the ‘peer appearance culture’ as a socializing force in appearance-RS. The propensity of one’s friends to base their self worth on physical appearance, be dissatisfied with their appearance, and engage in dieting or weight loss behaviours, may provide observable and salient messages about socio-cultural standards of beauty and attractiveness within and outside one’s friendships and groups, and thus be linked with greater sensitivity to appearance-based rejection. This view has been supported by qualitative research finding that dieting behaviour by close friends leads adolescent girls to feel that they too ought to be dieting (Wertheim, Paxton, Schutz, & Muir, 1997). Additionally, a friendship group (but not best friend) with a lower BMI may be perceived as threatening, and may provoke concerns about social acceptance and rejection based on one’s own appearance. Notably, researchers have advocated for assessing both close friendship ties, as well as broader friendship connections, given the differing socialisation, quality, and mutuality of these diverse relationships, and that some adolescents have a friendship group but not a mutual best friend, and vice versa (Brown, 1989).

Age and Gender

Researchers have noted the declining age at which body image and appearance concerns first emerge, with girls as young as six years reporting a desire for a thinner body (Lowes & Tiggemann, 2003). However, it is during the early years of adolescence that these concerns become more prevalent (Littleton & Ollendick, 2003), and it is from adolescence to emerging adulthood that body dissatisfaction shows a sharp linear increase for girls (Bucchianeri, Arikian, Hannan, Eisenberg, & Neumark-Sztainer, 2013). There are mixed findings regarding the trajectory of body image concerns for boys, with some studies showing increasing dissatisfaction during adolescence (e.g., Bucchianeri et al., 2013) and other studies showing declines (e.g., Bearman, Martinez, Stice, & Presnell, 2006). It is theorized that appearance concerns tend to emerge and reach their peak during adolescence due

to a perfect storm of emotional and physical development, and the maturation of interpersonal relationships, including interactions with romantic interests, in conjunction with mounting sociocultural pressures (Piran, 2010; Thompson, Heinberg, Altabe, & Tantleff-Dunn, 1999; Williams & Currie, 2000). For the present study, a sample of emerging adolescents was recruited in order to capture the period of development during which appearance concerns typically emerge, and during which interpersonal relationships become more salient and autonomous. Given the rapid socio-emotional and biological changes that occur during these early years of adolescence (i.e., “emerging adolescence”), we anticipated that even when focusing on a sample comprising a relatively narrow age range (i.e., 9 – 14 years), there would likely be differences in our hypothesized associations between older and younger participants. Specifically, it was anticipated that older participants would be more invested in, and influenced by, their peer relationships, and therefore it was theorized that older compared to younger participants would show stronger associations of appearance-RS with indicators of the peer appearance culture to which they are exposed.

As noted above, there are often differences observed in the day-to-day experience and developmental trajectory of appearance concerns between boys and girls, and in the relationship of appearance concerns with elements within the socio-cultural context. Biologically, researchers have suggested that puberty drives girls further away from the female thin ideal, while pubertal development tends to bring boys closer to their mesomorphic ideal (Stice, 2003). Moreover, a burgeoning body of work highlights the systematic risk imposed upon females at a broader cultural level, including for example, as a result of gender inequality and the objectification of women on the basis of physical appearance (see the Developmental Theory of Embodiment; Piran, 2010; Piran, Levine, & Steiner-Adair, 1999). Accordingly, appearance-RS is consistently found to be higher among females than males, across both adolescent (Bowker et al., 2013; Webb et al., 2014) and adult samples (Park et al., 2009). Yet, very few gender differences have been reported in associations of

appearance-RS with socio-cultural influences (Park et al., 2009; Webb et al., 2014; Webb & Zimmer-Gembeck). On the other hand, Bowker and colleagues (2013) have noted gender differences in the ways in which other-sex peer relationships moderate associations between appearance-RS and mental health outcomes, with high peer-rated acceptance by other-sex classmates posing a risk factor for boys, and low acceptance by other-sex classmates being a risk factor for girls. It is noteworthy that gender differences in associations of appearance-RS with socio-emotional risk factors and outcomes are not consistently examined. To address this, the present study examined whether models predicting appearance-RS from indicators of the peer appearance culture differed between boys and girls.

The Current Study

In summary, existing literature has identified the peer appearance culture as a crucial contributor to body shape and appearance concerns in adolescents (Helfert & Warschburger, 2011; Jones, 2004; Webb et al., 2014; Webb & Zimmer-Gembeck, 2015). Yet, the social underpinnings of appearance-RS has been studied with an overreliance on cross-sectional research and self-report data, which is unable to pinpoint direction of effects and makes it unclear regarding how much of the associations are due to reporter bias and shared method variance. Accordingly, the aim of the present study was to examine both dyadic and group friendship factors that may be longitudinally linked to appearance-RS in emerging adolescents, by determining whether friends' self-reported appearance concerns and behaviour prospectively predicted adolescents' self-reported appearance-RS six months later. We also considered whether associations differed for boys compared to girls, and for younger (9 to 11 years) compared to older (12 to 14 years) adolescents. We hypothesised that adolescents' appearance-RS at Time 2 would show more increases relative to six months earlier (at T1) when they had reciprocated friends who were higher in T1 appearance-RS, appearance dissatisfaction, body change strategies, extreme weight loss behaviours, and BMI. Also, we

examined one positive aspect of appearance, namely positive self-perceptions. We hypothesised that adolescent appearance-RS at Time 2 would show more decreases relative to six months earlier (at T1) when they had reciprocated friends who were higher in T1 positive self-perceptions of appearance. These associations were hypothesised for both the closest dyadic friendship identified by the participants (Hypothesis 1) and within friendship groups (Hypothesis 2). We also hypothesized that associations would be stronger for older compared to younger adolescents (Hypothesis 3), and for girls compared to boys (Hypothesis 4).

Method

Participants

Participants were 387 students (172 males, 215 females) from three independent private schools in an urban area of Australia, encompassing moderate to high socio-economic status (SES). These private schools were approached for participation given evidence of elevated concerns about appearance among young people of middle to high SES (O’Dea & Caputi, 2001). Participants were in grades 5, 6 and 7 at Time 1. There were 183 students (44% boys) between the ages of 9 and 11 years, and 203 students (44% boys) between the ages of 12 and 14 years. Overall at Time 1, participants were ages 9 years 8 months to 14 years old ($M_{\text{age}} = 12.0$, $SD = 0.90$). Notably, there was just one 9-year-old participant, and one 14-year-old participant, while the remaining students (99.5%) were between ages 10 and 13 years. Participants were predominantly white/Caucasian (78.6%), or Asian (15.2%).

For the friendship dyad analyses, a subset of 178 participants was included (42% boys). Of these 178 participants, 118 were identified as members of reciprocally nominated best friend dyads. Forty-eight participants were paired with their nominated best friend who also participated and confirmed the friendship connection, but who did not reciprocate the ‘best friend’ nomination. However, for these cases, no other participant nominated that same person as a best friend (i.e., the

best friend nomination was unique). Twelve participants were nominated as a best friend by more than one individual, so to ensure each participant was included as a closest friend no more than once, one of the nominating individuals was randomly selected to be included in analyses. All included participants nominated same-sex best friends, and a similar pattern of associations was observed between the reciprocated and the non-reciprocated best friend dyads. For friendship group analyses, participants were included if they had at least 50% of their nominated friends also participate in the study and reciprocate friendship nominations. This resulted in a subset of 284 target participants (120 boys, 165 girls) for analyses. Included participants did not differ from those not included in dyadic and friendship group analyses on demographic or study variables.

Procedure

Study approval was obtained from the university Human Research Ethics Committee. Active parental consent was obtained, with consent forms sent home with children and returned to the school. The class within each grade, at each school, that returned the most consent forms (regardless of whether parental consent to participate was provided) was awarded a cupcake party. Participating students also received a small gift (e.g., novelty pencil or sticker) when the survey was completed. This research comprises a portion of an ongoing longitudinal study concerned with socio-emotional development of adolescents, which will involve the completion of a questionnaire booklet five times over two years. The present study is based on Wave 1 and 2, which were assessed around six months apart. The questionnaire, which comprised additional measures not included in this paper, was completed at two time points, six months apart, each taking approximately 60 minutes. Questionnaires were completed in classroom size groups at students' schools, and at T1 each student was taken to a private area for measurement of height and weight. A psychologist was available at each session to debrief any student who appeared or reported being distressed, and students were encouraged to consult their school psychologist should they require it.

Measures

Friend nomination. From a provided list of all students in the same grade, participants specified the ID codes of their friends, and indicated who their closest friend was.

Appearance-RS. The Adolescent Appearance-RS Scale (Webb et al., 2014) was used to measure appearance-RS. Students were asked to imagine themselves in 10 hypothetical scenarios that include interactions with friends, peers, romantic interests and unspecified persons. Some of these scenarios refer to specific aspects of appearance (e.g., “You are leaving your house to go to school when you notice a big pimple on your face”, “You look in the mirror and notice that your stomach is getting bigger”) while other scenarios are more ambiguous, and do not prompt consideration of specific aspects of appearance (e.g., “Your boyfriend/girlfriend of 3 months is considering breaking up with you”, “Your friend introduced you to a new friend. You had fun hanging out and you really like the person. However, since that day that new friend hasn’t called or texted you”). Participants are asked to indicate on a 6-point scale their anxiety/concern about being rejected based on their appearance (e.g., “How concerned or anxious would you be that he/she wants to break up with you because of the way you look?”; 1 = *not concerned*, 6 = *very concerned*), and their expectation of appearance-related rejection in the imagined scenario (e.g., “Do you think your boyfriend/girlfriend is considering breaking up with you because of the way you look?”; 1 = *No!!*, 6 = *Yes!!*). Anxious concern was multiplied by expectation of rejection for each item, and these 10 product scores were averaged to form the total score. A higher score indicated greater appearance-RS. Cronbach’s α was .93 for girls and .85 for boys.

Dissatisfaction with appearance. The 22-item Body-Image Ideals Questionnaire (BIQ; Cash, 2000) was used to assess dissatisfaction with appearance. With reference to a variety of physical attributes (e.g., skin complexion, facial features, weight, muscle tone, definition and

strength), participants are asked to rate how closely they resemble their physical ideal (0 = *exactly as I am*, 3 = *very unlike me*), and then indicate how important they feel it is to embody that ideal (0 = *not important*, 3 = *very important*). As per the BIQ manual, discrepancy scores of 0 were recoded as -1, then the discrepancy was multiplied by importance scores for each item, and these product scores were averaged to form the total score. The total score has a possible range of -3 (very important and congruent actual-ideal) to 9 (very important and maximum actual-ideal discrepancy). Cronbach's α was .87 for girls and .73 for boys.

Positive appearance self-perceptions. The 5-item appearance subscale of the Self-Perception Profile for Adolescents (Harter, 2012) was used to assess positive appearance self-perceptions, and refers to participants' self-perceptions of "looks", physical appearance, attractiveness and bodies. The scale utilises a structured alternative format to reduce social desirability and provide a range of response options. Example items include: "Some people are *not* happy with the way they look BUT other people *are* happy with the way they look", and "Some people think they *are* good looking BUT other people think that they are *not* very good looking". Participants are required to indicate which type of person they are most like, and whether the statement is "*really true of me*" or "*sort of true of me*". Items are scored 1 (least adequate self-judgment + really true of me), 2 (least adequate self-judgment + sort of true of me), 3 (most adequate self-judgment + sort of true of me), or 4 (most adequate self-judgment + really true of me). Cronbach's α was .86 for girls and .81 for boys.

Body change strategies. Six items were used to assess the frequency with which participants worry, think, and engage in eating (or eating restriction) and exercise strategies in an effort to modify their body size or muscle tone (see Holt & Ricciardelli, 2002). An example item is: "How often do you EAT OR AVOID particular foods in order to change your body size or muscle

tone?" (1 = *never*, 5 = *always*). Averaging all items formed a total score, and a higher score indicated greater engagement in body change strategies. Cronbach's α was .91 for girls, .88 for boys).

Extreme weight-loss behaviours. Five items appropriate for this age group from the EAT-26 (Garner, Olmstead, Bohr, & Garfinkel, 1982) were used to assess extreme eating and weight loss behaviours. Items assessed binge eating, vomiting to purge food, use of laxatives, diet pills or diuretics, excessive exercise (>60 mins/day), and consumption of pills or powders to reduce fat or change muscle mass. Participants were required to indicate the frequency with which they engaged in the behaviours over the past six months (1 = *never*, 2 = \leq *once a month*, 3 = *2-3 times/month*, 4 = *once a week*, 5 = *2-6 times/week*, 6 = \geq *once a day*). Averaging all items formed a total score. Cronbach's α was low (.53 for girls, .22 for boys), but this was expected given the diversity and severity of behaviours assessed, and the age of the participants.

BMI. BMI (weight kg/height m²) was calculated for each participant, using measurements taken individually, with participant consent, by a trained researcher.

Overview of Analyses

To assess effects within friendship dyads, AMOS software (IBM Corporation, Armonk, NY) was used to calculate Actor-Partner Interdependence Models (APIMs) for indistinguishable dyads (e.g., Kashy & Kenny, 2000). This method enabled assessment of the extent to which one person's score on an independent variable was associated with his or her own score on a dependent variable (actor effect), and also his or her best friend's score on the dependent variable (partner effect), while statistically controlling participants' own BMI, and for the non-independence in the two individuals' responses (see Figure 1; Kenny & Ledermann, 2010). The following equality constraints were applied: equal means and variances of the causal variables, equal intercepts of the outcome variables,

equal error variances, equal actor effects, and equal partner effects (Kenny & Ledermann, 2010). The association of the independent variables with appearance-RS was assessed in seven separate models.

For friendship group analyses, unique friendship groups were formed for each target participant based on reciprocated friendship nominations. Friendship group scores for each variable were calculated by aggregating the scores of group members (excluding the target member). A series of hierarchical multiple regression was used to control for individual appearance-RS at Time 1 (T1; entered at step 1), in order to assess unique associations between each T1 friendship group variable (step 2) and individual appearance-RS at Time 2 (T2).

To assess age differences, we split participants into two age groups (younger coded as '0' = 9 to 11 years; older coded as '1' = 12 to 14 years). Then, multiple group structural equation modelling was conducted to examine age moderation of the best friend models, and Process (Hayes, 2013) was used to assess whether the association of each T1 friendship group variable with T2 individual appearance-RS differed according to age, controlling for T1 individual appearance-RS and BMI.

Finally, and similarly to above, multiple group structural equation modelling and Process were used to assess gender moderation in friendship dyad and group analyses, respectively.

Given the size of the questionnaire from which these data were drawn, a planned missing design was used. In this design, some items or measures are only completed by some of the participants and missing data are managed with imputation (Little, Jorgensen, Lang, & Moore, 2014). This approach reduces the demands placed on participants involved in longitudinal research, resulting in lower rates of unplanned missing data and higher validity (Little & Rhemtulla, 2013). In our application of planned missingness, all participants completed most measures, but appearance dissatisfaction items were administered to a randomly selected 50% of the sample. To retain all participants in all analyses, multiple imputation was used and pooled results are reported.

Results

Means, Standard Deviations, and Gender Differences

Table 1 presents the *Ms* and *SDs* of all measures for the adolescents in the analyses of friendship dyads and groups. Tables 2 and 3 show the correlations between all measures, with associations of best friend reports of the appearance culture with self-report appearance-RS shown in Table 2, and friendship group reports of the appearance culture with self-reported appearance-RS shown in Table 3. As can be seen, four "partner effects" were suggested, with higher appearance-RS, more appearance dissatisfaction, less positive self-perceptions of appearance, and a higher measured BMI in best friends at T1 each associated with higher T2 self-report appearance-RS (see Table 2). Also, all T1 measures of the friendship group appearance culture were associated with T2 self-report appearance-RS (see Table 3).

Best friends. Table 4 presents bootstrapped estimates of model paths, standard errors, and confidence intervals of actor and partner correlational effects within friend dyads (also see Figure 1 for an illustration of the model). As predicted (Hypothesis 1), of the six models tested, four partner effects were significant. Adolescents' appearance-RS at T2 was significantly predicted by their best friends' T1 positive appearance self-perceptions ($\beta = -.09, p = .04$), body change strategies ($\beta = .10, p = .04$), extreme weight loss behaviours ($\beta = .11, p = .01$), and BMI ($\beta = .12, p = .02$), after controlling for the adolescents own score on that same measure, their BMI, and appearance-RS at T1. Thus, adolescents with reciprocated best friends who reported more positive appearance self-perceptions were found to be lower in appearance RS at T2 relative to T1 (i.e., declined in appearance-RS over time). Conversely, adolescents with reciprocated best friends that reported more engagement in body change strategies and extreme weight loss behaviours, and who were higher in BMI were found to be higher in appearance-RS at T2 relative to T1 (i.e., increase in appearance-RS over time).

Three significant actor effects were also found, with appearance-RS at T2 predicted by adolescents' own T1 appearance-RS ($\beta = .70, p = .01$), positive appearance self-perceptions ($\beta = -.16, p = .01$), and body change strategies ($\beta = .12, p = .03$) after controlling for appearance-RS at T1. The actor effect of adolescents' T1 appearance dissatisfaction with T2 appearance-RS was marginally significant ($\beta = .14, p = .055$). Thus, adolescents lower in positive appearance self-perceptions, and higher in appearance dissatisfaction and body change strategies showed a greater increase in appearance-RS from T1 to T2.

Friendship groups. Table 5 presents results of hierarchical multiple regression analyses regressing T2 individual appearance-RS on each of the T1 friendship group reports of the appearance culture, controlling for T1 individual appearance-RS and BMI. As predicted (Hypothesis 2), adolescents had greater increases in appearance-RS over time (i.e., higher appearance-RS at T2 relative to T1) when they had a friendship group that reported higher appearance dissatisfaction ($\beta = .14, p < .01$). Adolescents whose friendship group reported more positive appearance self-perceptions were found to be lower in appearance RS at T2, relative to T1 ($\beta = -.09, p = .04$). Unique associations of individual appearance-RS at T2 with friends' body change strategies ($\beta = .09, p = .06$) and extreme weight loss behaviours ($\beta = .08, p = .06$) approached significance. The unique associations between friendship groups' appearance dissatisfaction at T1 and individual appearance-RS at T2 remained significant even when also controlling for adolescents' own T1 appearance dissatisfaction ($\beta = .16, p = .01$). The friendship groups' average appearance-RS and BMI at T1 were not associated with adolescents' self-reported appearance-RS at T2.

Age. For the dyadic analyses, multiple group SEM showed that the fit of two models significantly differed when the structural paths (i.e., pathways between T1 and T2 measures) were unconstrained or allowed to differ between younger (9 – 11 years) and older (12 – 14 years) participants, compared to when all paths were constrained to be the same. This suggests that for

these two models, the pathways from T1 to T2 measures significantly differ between younger and older participants. The particular paths that significantly differ according to age were determined by unconstraining each structural path one at a time for each model, and examining change in model fit ($ps < .05$).

First, the fit of the model predicting T2 appearance-RS from T1 appearance dissatisfaction differed when structural paths were unconstrained between younger and older participants, $\chi^2\Delta (4, N = 178) = 9.88, p = .04$. Younger participants showed a negative actor association between T1 BMI and T2 appearance-RS ($\beta = -.10, p = .02$), while the association was not significant in older participants ($\beta = -.07, p = .10$).

Second, the fit of the model predicting T2 appearance-RS from T1 positive self-perceptions differed when structural paths were unconstrained between younger and older participants, $\chi^2\Delta (4, N = 178) = 13.92, p = .008$. Similar to above, the actor association between adolescents' T1 BMI and T2 appearance-RS was significant and negative in the younger group ($\beta = -.10, p = .01$), and it was not significant in the older group ($\beta = -.07, p = .08$). Moreover, it was revealed that the partner association between best friends' T1 positive self-perceptions and adolescents' own T2 appearance-RS was significant and negative in younger ($\beta = -.10, p = .03$), but not older adolescents ($\beta = -.03, p = .46$).¹

To summarise, when evaluating differences between younger and older participants, one new finding emerged, and one previously described finding was qualified by age. Specifically, in the models predicting T2 appearance-RS from T1 appearance dissatisfaction and positive self-

¹ The fit of the model predicting T2 appearance-RS from T1 appearance-RS differed when structural paths were unconstrained between younger and older participants, $\chi^2\Delta (3, N = 178) = 12.92, p = .005$. However, the association between adolescents' T1 BMI and T2 appearance-RS (i.e., actor effect) was not significant in either age group, but was stronger in the younger ($\beta = -.07, p = .07$) compared to older ($\beta = -.03, p = .48$) group.

perceptions, only younger participants' T1 BMI was negatively associated with T2 appearance-RS. This actor effect emerged only when evaluating the effect of age. On the other hand, in the positive self-perceptions model, T2 appearance-RS was negatively associated with best friends' positive self-perceptions in the younger group only (partner effect). This finding suggests that the potentially protective effect of best friends' positive self-perceptions for appearance-RS may be specific to younger adolescents in particular.

Next, for friendship group analyses, moderated regression analyses showed that age did not moderate any associations between T1 friendship group reports of the peer appearance culture and T2 individual appearance-RS, when controlling for T1 individual appearance-RS and BMI (p s > .13).

Gender. For the dyadic analyses, multiple group SEM showed that the model fit predicting T2 appearance-RS from T1 extreme weight loss behaviours significantly differed when the structural paths (i.e., pathways between T1 and T2 measures) were unconstrained between boys and girls, $\chi^2\Delta$ (4, $N = 178$) = 10.08, $p = .04$. By unconstraining each structural path one at a time, it was determined that all structural pathways from T1 to T2 measures differed by gender (p s < .05). First, the actor association between adolescents' own T1 extreme weight loss behaviours and T2 appearance-RS was positive and significant in girls ($\beta = .13$, $p = .004$) but not boys ($\beta = .03$, $p = .56$). On the other hand, the gender difference in the partner association between best friends' T1 extreme weight loss behaviours and individual T2 appearance-RS was one of magnitude, whereby the association was significant in both boys and girls, but was stronger in girls ($\beta = .17$, $p < .001$) than boys ($\beta = .08$, $p = .04$). Therefore, in general, the dyadic models predicting appearance-RS are

not qualified by gender, with the exception of adolescents' own extreme weight loss behaviours, which positively predicted increasing appearance-RS in girls, but not boys.²

Similarly for the friendship group analyses, moderated regression analyses revealed that the association between friendship group reports of extreme weight loss behaviours at T1 and individual appearance-RS at T2 differed according to gender (while also controlling for individual appearance-RS and BMI at T1; $B = 5.76, p = .02$). Examining the association in girls separate to boys showed a significant and positive association among girls (effect = 3.99, $p = .003$), and no association among boys (effect = -1.77, $p = .37$). Gender was not found to moderate any other associations between T1 friendship group reports of the peer appearance culture and T2 individual appearance-RS ($ps > .12$).

Discussion

The present research extends what is known about the social underpinnings of appearance-RS, and supports theory and previous research on social peer group processes (Hutchinson & Rapee, 2007; Jones, Vigfusdottir, & Lee, 2004; Kandel, 1978; Rayner, Schniering, Rapee, Taylor, & Hutchinson, 2013), whereby children and adolescents are argued to socialise particular attitudes and behaviours within their friendship dyads and groups. In this case, the findings support our hypotheses that best friends and friendship group members play a role in young adolescents' emerging anxiety about, and expectation of rejection because of their appearance (i.e., their *appearance-RS*).

Even more striking, our findings highlight how the *behaviours* of a reciprocated close friendship, or a friendship group, may be most important in relation to emerging adolescents' increasing appearance-RS over time. For example, we did not find that best friend and peer group

² The model fit predicting T2 appearance-RS from T1 extreme weight loss behaviours differed when the actor association between adolescents' T1 BMI and T2 appearance-RS was unconstrained between boys and girls, however the association was not significant in boys ($\beta = -.06, p = .16$) or girls ($\beta = -.01, p = .72$).

members' own appearance-RS predicted increasing appearance-RS over time (above and beyond one's own appearance-RS), but we did find that best friends and friendship groups who reported more behaviours relevant to an appearance culture (higher levels of body change strategies such as engaging in diet and exercise; extreme weight loss behaviours such as excessive exercise, use of laxatives and diet pills, vomiting to purge, and binge eating) did predict their friends' increased level of appearance-RS when examined relative to appearance-RS 6-months earlier. These findings identify the importance of observing the behaviours of best friends and members of friendship groups in order for their influence to be strong enough to change individual adolescent's own personal concerns about rejection because of appearance over time. At the same time, we also found that having friends who are feeling more competent in their appearance appears to help alleviate some appearance-RS over time. These results were found even when controlling for individual adolescents' own appearance-RS and relevant appearance concern or behaviour (i.e., appearance self-perceptions, body change strategies or extreme weight loss behaviours). These findings are consistent with, but significantly strengthen, the interpretation of previous cross-sectional research, which has shown concurrent associations of markers of peer appearance culture with elevated appearance-RS in university students (Park et al., 2009) and adolescents (Webb et al., 2014).

Best friend's BMI was also a precursor of increasing appearance-RS over time, perhaps reflecting that emerging adolescents observe the social consequences of having a friend that is higher in BMI relative to others. Further, BMI was correlated with elevated appearance dissatisfaction and weight loss strategies. Considering these findings across the different analyses strengthens our interpretation that most influence on appearance-RS within friendship dyads and groups stems from friends' observable behaviours and physical features. However, this finding regarding BMI should be considered in conjunction with previous cross-sectional findings (Webb & Zimmer-Gembeck, 2015) that found that appearance-RS was higher in adolescents whose friendship network had a

lower average BMI. It may be that while a friendship network that has a lower BMI is experienced at that time as an appearance threat (i.e., a young person may perceive them self to compare unfavourably to their friendship group in terms of body size or shape; Fitzsimmons-Craft et al., 2014; Galioto & Crowther, 2013), a best friend with a higher BMI may convey a particularly influential message over time, and consequently socialise increasing sensitivity to appearance-based rejection. In support of this idea, research studies that focus on peer influences in other domains, such as alcohol consumption and substance use, suggest that best friends influence one another through shaping attitudinal and behavioural norms (e.g., Kam & Wang, in press; see Webb & Zimmer-Gembeck, 2014 for a review). Moreover, higher BMI puts young people at risk of peer victimization (Frisen, Lunde, & Hwang, 2009), and as such, having a best friend with a higher BMI may expose an adolescent to their best friends' victimization, prompting increasing sensitivity to peer rejection about one's own appearance. Overall, even after controlling for adolescents' own BMI, it seems that having friends with lower BMI relative to their peers or having friends with higher BMI relative to their peers may each be detrimental to adolescents' own views and concerns about their appearance in some circumstances.

Gender and Age

Given the significant emotional and physical changes, and increases in friendship intimacy and mutuality that occurs during the early years of adolescence, we anticipated that older participants would show stronger associations between indicators of the peer appearance culture and appearance-RS than younger participants. However, this hypothesis was not supported. In particular, younger participants (9 – 11 years), but not older participants (12 – 14 years) were found to show declining appearance-RS over six months when their best friend reported more positive perceptions of their own appearance. Moreover, younger, but not older, participants who had a lower BMI reported increasing appearance-RS over time. However, this finding only emerged in models that included

(i.e., controlled for) appearance self-evaluation, such as appearance dissatisfaction or positive appearance self-perceptions. This finding suggests that beyond one's self-evaluative perceptions of appearance, having a lower BMI poses a risk factor for increasing sensitivity to rejection on the basis of appearance over time, in emerging adolescents. Overall, these findings suggest that having a best friend with positive appearance self-perceptions, and having a higher BMI may be protective for appearance-RS in the earliest years of adolescence (9 – 11 years), but not toward middle adolescence (12 – 14 years).

Boys and girls experience different cultural pressures, expectations about appearance, and social experiences, all of which are theorised to play a role in their respective attitudes about physical appearance (Piran, 2010; Smolak, Levine, & Thompson, 2001). Gender differences in associations of appearance-RS with social influences and outcomes are not consistently examined, and few differences have been found (for an exception see Bowker et al., 2013). However, previous research tends to show a stronger influence of friends and peers, and broader sociocultural influences, in relation to body dissatisfaction for girls than boys (Smolak et al., 2001). Congruent with these past findings, the present study found that boys and girls showed greater increases in appearance-RS over a 6-month period when their best friends reported greater use of extreme weight loss behaviours. However, this association was stronger in girls. Moreover, girls, but not boys, reported greater increases in appearance-RS when their friendship group reported greater use of extreme weight loss behaviours. These results are supportive of the notion that girls are more strongly influenced than boys by the weight management behaviours of their friends, which may prompt increasing concerns about rejection on the basis of their own appearance. Moreover, girls, but not boys, who reported greater use of extreme weight loss behaviours themselves, also reported increasing appearance-RS over six months.

Implications

Given the emotional distress experienced by many adolescents when they have appearance-related concerns and heightened sensitivity to rejection (Bowker et al., 2013; Bucchianeri et al., 2015), the often co-morbid and potentially unhealthy methods undertaken in an effort to enhance appearance (Bucchianeri et al., 2015; Calogero et al., 2010), and the conflicts within friendships that can occur when adolescents are more sensitive to rejection (Croft & Zimmer-Gembeck, 2014), research that enables a better understanding of the factors that may contribute to the onset, escalation and desistance of appearance-RS during adolescence is vital for designing future interventions to reduce eating and body image disorders and improve friendship environments. Moreover, the value of examining additional correlates and predictors of appearance-RS, such as family and media influences, is important to fully comprehend the onset and progression of appearance-RS both prior to and during adolescence when all of these socialising environments play prominent roles in children's daily lives. The inherently social quality of appearance-RS (intrinsic to appearance-RS processing biases, as well as the social risk and protective factors and consequences) highlights the potential value of school-based interventions, or interventions specifically targeting adolescents' interpersonal interactions around physical appearance across all environmental contexts.

Moreover, the findings that friends' behaviours, including dieting and exercise, and more extreme weight management efforts appear to be prospective risk factors for increasing appearance-RS highlight the importance of supporting young people in establishing healthy eating and exercise practices for their own physical and emotional well-being, in addition to preventing maladaptive contagion among friends. Similarly, these findings also bring to mind the question of whether adolescents' healthful eating and exercise practices might pose a positive influence (i.e., adaptive contagion effects) on friends' appearance attitudes and related behaviours.

Limitations and Future Directions

The findings may be limited in generalizability given that young adolescents had to have reciprocated friends and a participating friendship group. Yet, we found no significant differences in those who were or were not included in the analyses. Moreover, by examining partner effects and controlling for actor effects, we move closer to demonstrating socialisation among friends. Nevertheless, selection versus socialisation effects are difficult to differentiate without using a more complex longitudinal design where the focus is on assessing individuals prior to the formation of new friendships and examining changes over time within these friendships. Another limitation was the assessment of extreme weight loss behaviours. This measure had low internal consistency, however our aim was to assess a diverse set of problem behaviours that we did not expect to covary with each other so this may not have been of great concern here. Third, based on the demographic of the participating schools in the present study, participants were likely from families of middle to high SES, and they reported being predominantly of Caucasian descent. As such, the results may not be reflective of young people experiencing lower socio-economic conditions or those from non-Caucasian cultural origins, and future research would benefit from utilising more diverse cultural and socio-economic samples.

This paper focused on peers' self-reported behaviours and concerns, which permitted confirmation that it is not just *perceptions* of friends' behaviours and concerns that are important in shaping one's attitudes about appearance. In other words, we had a focus on adolescents' immediate social environment, as reported by their friends; yet, this environment is intrinsically imbedded within a broader cultural context that was beyond the scope of the present paper. However, future research would benefit from a multi-level examination of contagion effects of friends and peers in conjunction with cultural-derived (and often gendered) values, ideals and pressures, such as internalised appearance ideals, self-objectification, and gender inequality. Moreover, an important avenue for future research is to elucidate how some young people retain positive appearance

attitudes and healthful behaviours despite exposure to social pressures at multiple contextual levels (i.e., within the peer group, family environment, and the media, and at a societal level).

Conclusion

The present study supports peer selection and socialization theory (Kandel, 1978) in the domain of appearance-related concerns, and points to the role of the peer appearance culture in body and appearance concerns. We particularly found that it was behaviours and features of friends that are more easily observable that are most relevant to emerging adolescent increases in appearance-RS over time. Appearance-RS increased over six months among emerging adolescents whose best friend and/or friendship group reported more behavioural attempts to change their bodies and to improve their physical appearance. Appearance-RS was also found to increase over time among adolescents who had a best friend with a higher BMI relative to others and a friendship group that was more highly dissatisfied with their bodies. Often overlooked however, is the potentially positive influence of friends in relation to appearance concerns. Promisingly in the current study, friends who reported more positive attitudes toward personal appearance appeared protective of adolescents' own concerns about appearance-based rejection over time, highlighting the potential value of targeting best friend dyads or groups in interventions aimed at improving adolescents' body attitudes. These findings emphasise the need for further research to elucidate the processes whereby adolescent friends demonstrate similarity and socialise each others' appearance concerns, but can also be positive resources for managing and alleviating such concerns. Further research on appearance-RS, which has a dual focus on both physical appearance and belongingness concerns, will have important implications for directing future interventions that could alleviate the self-concept, emotional distress, and social functioning and engagement disruptions that are common among adolescents and adults with extreme body image and appearance concerns, such as Body

Dysmorphic Disorder (Lavell, Zimmer-Gembeck, Farrell, & Webb, 2014; Park, 2007; Park et al., 2010; Park & Pinkus, 2009; Webb et al., 2015).

References

- Badaly, D. (2013). Peer similarity and influence for weight-related outcomes in adolescence: A meta-analytic review. *Clinical Psychology Review, 33*, 1218–1236.
doi:10.1016/j.cpr.2013.09.003
- Bowker, J. C., Thomas, K. K., Spencer, S. V., & Park, L. E. (2013). Examining appearance-based rejection sensitivity during early adolescence. *Journal of Research on Adolescence, 23*, 375–388. doi:10.1111/jora.12003
- Brown, B. B. (1989). The role of peer groups in adolescents' adjustment to secondary school. In Berndt, T. J., and Ladd, G. W. (Eds.), *Peer Relationships in Child Development*. New York: Wiley.
- Bucchianeri, M. M., Fernandes, N., Loth, K., Hannan, P. J., Eisenberg, M. E., Neumark-Sztainer, D. (2015). Body dissatisfaction: Do associations with disordered eating and psychological well-being differ across race/ethnicity in adolescent girls and boys? *Cultural Diversity and Ethnic Minority Psychology*. doi:10.1037/cdp0000036
- Carey, R. N., Donaghue, N., & Broderick, P. (2011). 'What you look like is such a big factor': Girls' own reflections about the appearance culture in an all-girls' school. *Feminism & Psychology, 21*, 299–316. doi:10.1177/0959353510369893
- Cash, T. F. (2000). *Manual for the Body-Image Ideals Questionnaire*. Retrieved from www.body-images.com
- Collins, W. A., & Laursen, B. (2004). Changing relationships, changing youth: Interpersonal contexts of adolescent development. *The Journal of Early Adolescence, 24*, 55-62.
doi:10.1177/0272431603260882

- Collins, W. A., & Steinberg, L. (2006). Adolescent development in interpersonal context. In N. D. Eisenberg, W. Damon, & R. M. Lerner (Eds.), *Handbook of Child Psychology, Sixth Edition, Volume Three* (pp. 1003-1067). New York: Wiley.
- Croft, C., & Zimmer-Gembeck, M. J. Friendship conflict, conflict responses, and instability: Unique links to anxious and angry forms of rejection sensitivity, *Journal of Early Adolescence*, *34*, 1094-1119. doi:10.1177/0272431613518972
- Dryman, M. T., & Heimberg, R. G. (2015). Examining the relationships among social anxiety, fears of evaluation, and interpretation bias. *Cognitive Therapy and Research*, *39*, 646-657. doi:10.1007/s10608-015-9694-4
- Fitzsimmons-Craft, E. E., Bardone-Cone, A. M., Wonderlich, S. A., Crosby, R. D., Engel, S. G., & Bulik, C. M. (in press). The relationships among social comparisons, body surveillance, and body dissatisfaction in the natural environment. *Behavior Therapy*. doi:10.1016/j.beth.2014.09.006
- Frisén, A., Lunde, C., & Hwang, P. (2009). Peer victimisation and its relationships with perceptions of body composition. *Educational Studies*, *35*, 337-348. doi:10.1080/03055690802648200
- Galioto, R., & Crowther, J. H. (2013). The effects of exposure to slender and muscular images on male body dissatisfaction. *Body Image*, *10*, 566-573. doi:10.1016/j.bodyim.2013.07.009
- Garner, D. M., Olmsted, M. P., Bohr, Y., & Garfinkel, P. E. (1982). The Eating Attitudes Test: Psychometric features and clinical correlates. *Psychological Medicine*, *12*, 871-878. <http://eat-26.com/Docs/Garner-EAT-26-1982.pdf>
- Gonsalves, D., Hawk, H., Goodenow, C. (2013). Unhealthy weight control behaviors and related risk factors in Massachusetts middle and high school students. *Maternal and Child Health Journal*, *18*, 1-11. doi:10.1007/s10995-013-1424-5

- Grogan, S. (2008). *Body image: Understanding body dissatisfaction in men, women, and children*. New York: Routledge.
- Harter, S. (2012). *Self-Perception Profile for Adolescents: Manual and questionnaires*. Retrieved from <https://portfolio.du.edu/SusanHarter/page/44210>
- Helfert, S., & Warschburger, P. (2011). A prospective study on the impact of peer and parental pressure on body dissatisfaction in adolescent girls and boys. *Body Image, 8*, 101–109. doi:10.1016/j.bodyim.2011.01.004
- Holt, K., & Ricciardelli, L. A. (2002). Social comparisons and negative affect as indicators of problem eating and muscle preoccupation among children. *Applied Developmental Psychology, 23*, 285–304. doi:10.1016/S0193-3973(02)00108-9
- Hutchinson, D. M., & Rapee, R. M. (2007). Do friends share similar body image and eating problems? The role of social networks and peer influences in early adolescence. *Behaviour Research and Therapy, 45*, 1557 – 1577. doi:10.1016/j.brat.2006.11.007
- Jones, D. C. (2004). Body image among adolescent girls and boys: A longitudinal study. *Developmental Psychology, 40*, 823–835. doi:10.1037/0012-1649.40.5.823
- Jones, D. C., Vigfusdottir, T. H., & Lee, Y. (2004). Body image and the appearance culture among adolescent girls and boys: An examination of friend conversations, peer criticism, appearance magazines, and the internalization of appearance ideals. *Journal of Adolescent Research, 19*, 323–339. doi:10.1177/0743558403258847
- Kam, J. A., & Wang, N. (in press). Longitudinal effects of best-friend communication against substance use for Latino and non-Latino white early adolescents. *Journal of Research on Adolescence*. doi:10.1111/jora.12147

- Kandel, D. B. (1978a). Homophily, selection, and socialization in adolescent friendships. *The American Journal of Sociology*, 84, 427–436. Retrieved from <http://www.jstor.org/stable/2777857>
- Kashy, D. A., & Kenny, D. A. (2000). The analysis of data from dyads and groups. In H. Reis & C. M. Judd (Eds.), *Handbook of research methods in social and personality psychology* (pp. 451–477). New York: Cambridge University Press.
- Keery, H., van den Berg, P., & Thompson, J. K. (2004). An evaluation of the tripartite influence model of body dissatisfaction and eating disturbance with adolescent girls. *Body Image*, 1, 237–251. doi:10.1016/j.bodyim.2004.03.001
- Kenny, D. A., & Ledermann, T. (2010). Detecting, measuring, and testing dyadic patterns in the Actor-Partner Interdependence Model. *Journal of Family Psychology*, 24, 359–366. doi:1.1037/a0019651
- Lavell, C. H., Zimmer-Gembeck, M. J., Farrell, L. J., & Webb, H. J. (2014). Victimization, social anxiety, and body dysmorphic concerns: Appearance-based rejection sensitivity as a mediator. *Body Image: An International Journal of Research*, 11, 391–395. doi:10.1016/j.bodyim.2014.06.008
- Little, T. D., Jorgensen, T. D., Lang, K. M., & Moore, E. W. G. (2014). On the joys of missing data. *Journal of Pediatric Psychology*, 39, 151–162. doi:10.1093/jpepsy/jst048
- Little, T. D., & Rhemtulla, M. (2013). Planned missing data designs for developmental research. *Child Development Perspectives*, 7, 199–204. doi:10.1111/cdep.12043
- London, B., Downey, G., Bonica, C., & Paltin, I. (2007). The causes and consequences of rejection sensitivity. *Journal of Research on Adolescence*, 17, 481–506. doi:10.1111/j.1532-7795.2007.00531.x

- Mooney, E., Farley, H., & Strugnell, C. (2009). A qualitative investigation into the opinions of adolescent females regarding their body image concerns and dieting practices in the Republic of Ireland (ROI). *Appetite*, *52*, 485–491. doi:10.1016/j.appet.2008.12.012
- Morin, A. J. S., Maiano, C., Marsh, H., Janosz, M., & Nagengast, B. (2011). The longitudinal interplay of adolescents' self-esteem and body image: A conditional autoregressive latent trajectory analysis. *Multivariate Behavioral Research*, *29*, 157-201.
doi:10.1080/00273171.2010.546731
- Moy, J., Petrie, T. A., Dockendorff, S., Greenleaf, C., & Martin, S. (2013). Dieting, exercise, and intuitive eating among early adolescents. *Eating Behaviors*, *14*, 529–532.
<http://dx.doi.org/10.1016/j.eatbeh.2013.06.014>
- Neumark-Sztainer, D., Wall, M., Larson, N. I., Eisenberg, M. E., & Loth, K. (2011). Dieting and disordered eating behaviors from adolescence to young adulthood: Findings from a 10-year longitudinal study. *Journal of the American Dietetic Association*, *111*, 1004-1011.
doi:10.1016/j.jada.2011.04.012
- Park, L. E. (2007). Appearance-based rejection sensitivity: Implications for mental and physical health, affect, and motivation. *Personality and Social Psychology Bulletin*, *33*, 490–504.
doi:1.1177/0146167206296301
- Park, L. E., & Pinkus, R. E. (2009). Interpersonal effects of appearance-based rejection sensitivity. *Journal of Research in Personality*, *43*, 602–612. doi:10.1016/j.jrp.2009.02.003.
- Park, L. E., Calogero, R. M., Young, A. F., & Diraddo, A. M. (2010). Appearance-based rejection sensitivity predicts body dysmorphic disorder symptoms and cosmetic surgery acceptance. *Journal of Social and Clinical Psychology*, *29*, 489-509. doi:10.1521/ jscp.2010.29.5.489

- Park, L. E., DiRaddo, A. M., & Calogero, R. M. (2009). Sociocultural influence and appearance-based rejection sensitivity among college students. *Psychology of Women Quarterly, 33*, 108–119. doi:1.1111/j.1471-6402.2008.01478.x
- Piran, N. (2010). A feminist perspective on risk factor research and on the prevention of eating disorders. *Eating Disorders, 18*, 183-198. doi:10.1080/10640261003719435
- Piran, N., Levine, M. P., & Steiner-Adair, C. (1999). *Preventing eating disorders: A handbook of interventions and special challenges*. London; Philadelphia: Brunner/Mazel.
- Presnell, K., Bearman, S. K., & Stice, E. (2004). Risk factors for body dissatisfaction in adolescent boys and girls: A prospective study. *International Journal of Eating Disorders, 36*, 389-401. doi:10.1002/eat.20045
- Rayner, K. E., Schniering, C. A., Rapee, R. M., Taylor, A., Hutchinson, D. M. (2013). Adolescent girls' friendship networks, body dissatisfaction, and disordered eating: Examining selection and socialization processes. *Journal of Abnormal Psychology, 122*, 93–104. <http://dx.doi.org/10.1037/a0029304>
- Rubin, K. H., Bukowski, W. M., & Parker, J. G. (2006) Peer interactions, relationships and groups. In N. D. Eisenberg, W. Damon, & R. M. Lerner (Eds.), *Handbook of Child Psychology, Sixth Edition, Volume Three* (pp. 571-645). New Jersey, US: John Wiley & Sons, Inc.
- Schur, E. A., Sanders, M., & Steiner, H. (2000). Body dissatisfaction and dieting in young children. *International Journal of Eating Disorders, 27*, 74–82.
- Smolak, L., Levine, M. P., & Thompson, J. K. (2001). The use of the sociocultural attitudes towards appearance questionnaire with middle school boys and girls. *International Journal of Eating Disorders, 29*, 216-223. doi:10.1002/1098-108X(200103)29:2<216::AID-EAT1011>3.0.CO;2-V

- Stice, E. (2003). Puberty and body image. In K. Hurrelmann, C. Currie, V. Rasmussen, & C. Hayward (Eds.), *Gender Differences at Puberty* (pp. 61-77). Cambridge, UK: Cambridge University Press.
- Terian, L. D. (2013). Gender differences in college student drinking: The relations of social and cognitive constructs. *Wayne State University Dissertations*. Paper 707.
http://digitalcommons.wayne.edu/oa_dissertations/707
- Webb, H. J., & Zimmer-Gembeck, M. J. (2014). The role of friends and peers in adolescent body dissatisfaction: A review and critique of 15 years of research. *Journal of Research on Adolescence*. doi:10.1111/jora.12084
- Webb, H. J., & Zimmer-Gembeck, M. J. (2015). Body image and body changes strategies within friendship dyads and groups: Implications for adolescent appearance-based rejection sensitivity. *Social Development*, 24, 1-19. doi:10.1111/sode.12081
- Webb, H. J., Zimmer-Gembeck, M. J., & Donovan, C. L. (2014). The appearance culture between friends and adolescent appearance-based rejection sensitivity. *Journal of Adolescence*, 37, 347-358. doi:10.1016/j.adolescence.2014.02.008
- Webb, H. J., Zimmer-Gembeck, M. J., Mastro, S., Farrell, L. J., Waters, A. M., & Lavell, C. H. (2015). Adolescents' body dysmorphic symptoms: Associations with same- and cross-sex peer teasing via appearance-based rejection sensitivity. *Journal of Abnormal Child Psychology*. doi:10.1007/s10802-014-9971-9.
- Wertheim, E. H., Paxton, S. J., Schutz, H. K., & Muir, S. L. (1997). Why do adolescent girls watch their weight? An interview study examining sociocultural pressures to be thin. *Journal of Psychosomatic Research*, 42, 345-355. doi:10.1016/S0022-3999(96)00368-6

Zimmer-Gembeck, M. J., & Nesdale, D. (2013). Anxious and angry rejection sensitivity, social withdrawal, and retribution in high and low ambiguous situations. *Journal of Personality, 81*, 29-38. doi:10.1111/j.1467-6494.2012.00792.x

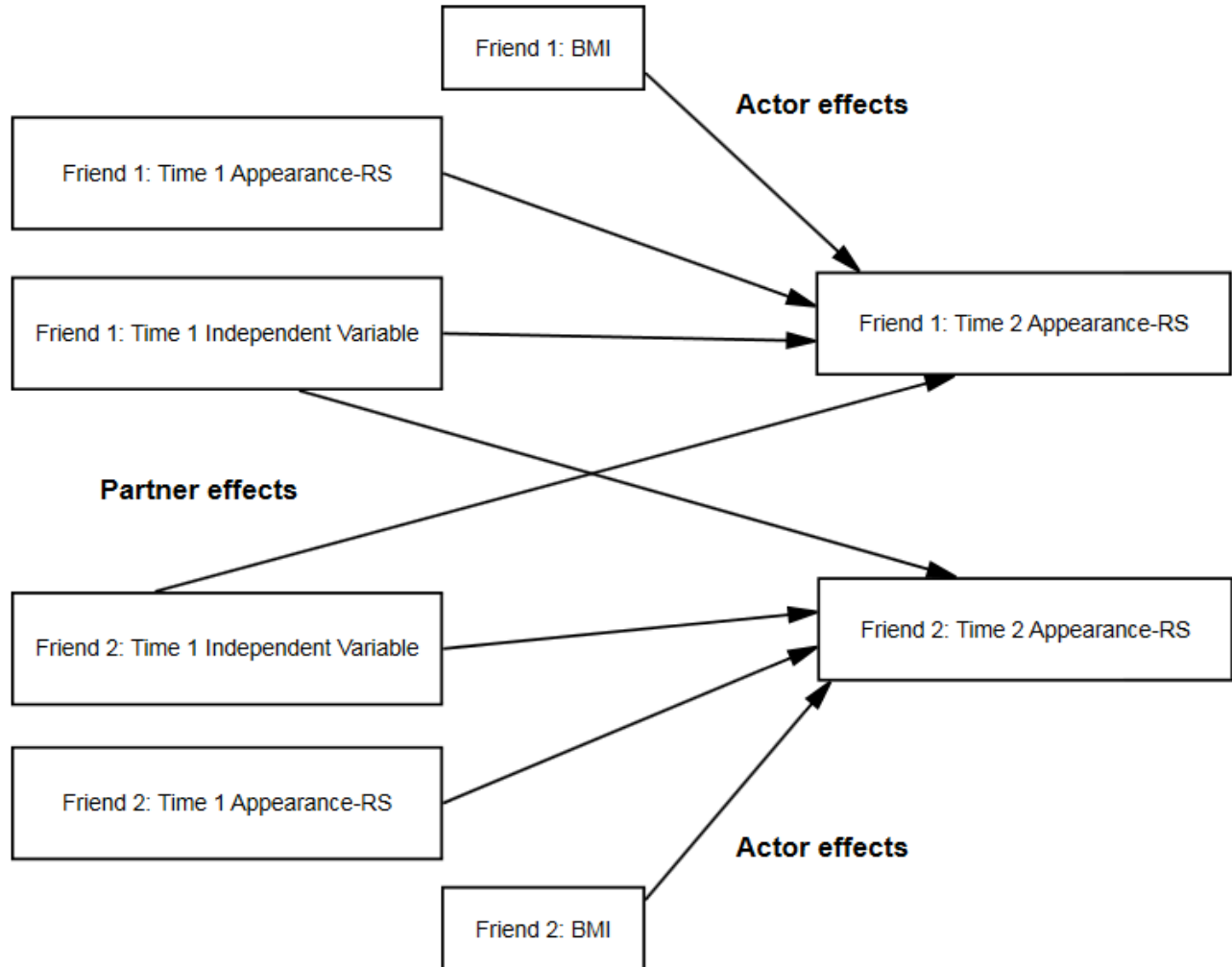


Figure 1. Graphical illustration of the APIM.

Table 1
Means and Standard Deviations on all Measures

	Mean (<i>SD</i>)	
	Friendship dyad sample (<i>N</i> = 178)	Friendship group sample (<i>N</i> = 284)
Appearance-RS T1	11.24 (7.54)	10.80 (7.40)
Appearance-RS T2	10.44 (7.80)	10.36 (7.31)
Appearance dissatisfaction	1.00 (1.69)	0.92 (1.57)
Positive appearance self-perceptions	2.75 (0.88)	2.82 (0.86)
Body change strategies	2.55 (1.03)	2.51 (1.02)
Extreme WLB	1.39 (0.50)	1.39 (0.51)
BMI	18.50 (3.00)	18.32 (2.84)

Table 2
Correlations of Best Friend Reports with Self-reported Appearance-RS (n = 178)

Measured variable	1	2	3	4	5	6	7
1. Self-reported appearance-RS T1	-						
2. Self-reported appearance-RS T2	.73**	-					
3. Best friend's appearance-RS T1	.23**	.18*	-				
4. Best friend's appearance dissatisfaction T1	.23**	.19*	.43**	-			
5. Best friend's positive appearance self-perceptions T1	-.26**	-.24**	-.46**	-.67**	-		
6. Best friend's body change strategies T1	.15	.14	.44**	.64**	-.52**	-	
7. Best friend's extreme weight loss behaviours T1	.05	.12	.11	.26**	-.28**	.47**	-
8. Best friend's BMI T1	.06	.15*	.14	.41**	-.37**	.46**	.27**

Note. T1 = Time 1, T2 = Time 2.

* $p < .05$. ** $p < .01$.

Table 3
Correlations Between Friendship Group Variables and Individual Appearance-RS (n = 284)

Measured variable	1	2	3	4	5	6	7
1. Self-reported appearance-RS T1	-						
2. Self-reported appearance-RS T2	.66**	-					
3. Friends' appearance-RS T1	.21**	.17**	-				
4. Friends' appearance dissatisfaction T1	.21**	.21**	.56**	-			
5. Friends' positive appearance self-perceptions T1	-.17**	-.21**	-.61**	-.68**	-		
6. Friends' body change strategies T1	.18**	.21**	.54**	.63**	-.56**	-	
7. Friends' extreme weight loss behaviours T1	.07	.11*	.28**	.33**	-.36**	.48**	-
8. Friends' BMI T1	.14**	.14**	.21**	.48**	-.43**	.53**	.29**

Note. T1 = Time 1, T2 = Time 2.

* $p < .05$. ** $p < .01$.

Table 4**Results of Six APIMs Predicting Time 2 Appearance-RS from Time 1 Measures of the Peer Appearance Culture, controlling for Time 1 Appearance-RS and BMI (n = 178)**

Variables	Unstandardised		Standardised				<i>p</i>
	Est	SE	Est	SE	Lower 95% CI	Upper 95% CI	
Model 1: Appearance-RS							
Actor effect	0.73	.04	.70*	.04	0.63	0.78	.01
Partner effect	-0.01	.04	-.01	.04	-0.08	0.05	.79
BMI	-0.07	.10	-.03	.04	-0.10	0.06	.64
Model 2: Appearance dissatisfaction							
Actor effect	0.65	.29	.14+	.06	-0.01	0.24	.055
Partner effect	0.30	.17	.06	.04	-0.01	0.14	.06
BMI	-0.19	.11	-.07	.04	-0.14	0.01	.13
Appearance-RS	0.67	.05	.64*	.05	0.55	0.74	.01
Model 3: Positive appearance self-perceptions							
Actor effect	-1.38	.42	-.16*	.05	-0.25	-0.06	.01
Partner effect	-0.79	.37	-.09*	.04	-0.17	-0.01	.04
BMI	-0.19	.10	-.07	.04	-0.14	0.01	.06
Appearance-RS	0.65	.05	.62*	.05	0.54	0.72	.01
Model 4: Body change strategies							
Actor effect	0.87	.38	.12*	.05	0.02	0.24	.03
Partner effect	0.74	.31	.10*	.04	0.01	0.18	.04
BMI	-0.19	.11	-.08	.04	-0.16	0.01	.10
Appearance-RS	0.68	.06	.65*	.05	0.57	0.75	.01
Model 5: Extreme weight loss behaviours							
Actor effect	0.79	.50	.05	.03	-0.02	0.12	.15
Partner effect	1.64	.56	.11*	.04	0.03	0.18	.01
BMI	-0.10	.10	-.04	.04	-0.11	0.04	.43
Appearance-RS	0.72	.04	.69*	.04	0.62	0.77	.01
Model 6: BMI							
Actor effect	-0.05	.10	-.02	.04	-0.10	0.07	.73
Partner effect	0.31	.12	.12*	.05	0.03	0.21	.02

Appearance-RS	0.73	.04	.70*	.04	0.63	0.77	.01
---------------	------	-----	------	-----	------	------	-----

+ $p < .06$, * $p < .05$.

Note. Est = Estimate, CI = Confidence Interval. In Models 2 to 6, friend and self-reported appearance-RS at T1 were also included as covariates (see Figure 1). See Figure 1 for a depiction of actor and partner effects.

Table 5
Results of Six Models Regressing Adolescents' Time 2 Appearance-RS on Time 1 Measures of Appearance Concerns Reported by Friendship Group Members, Controlling for BMI and Self-reported T1 Appearance-RS ($n = 284$)

Independent Variables	β	t	p	Lower 95% CI	Upper 95% CI
<i>All Models Step 1, $F(2, 281) = 112.21, p < .001, R^2 = .44$</i>					
Appearance-RS	.65**	14.96	<.01	0.57	0.75
BMI	.04	0.93	.35	-0.12	0.35
<i>Model 1, Step 2, $F(3, 280) = 74.70, p < .001, R^2 = .45$</i>					
Appearance-RS	.65**	14.16	<.01	0.56	0.74
BMI	.04	0.55	.59	-0.17	0.31
Friends' appearance-RS	.02	0.52	.60	-0.11	0.19
<i>Model 2, Step 2, $F(3, 280) = 79.87, p < .001, R^2 = .46$</i>					
Appearance-RS	.64**	13.87	<.01	0.54	0.72
BMI	.02	0.45	.66	-0.18	0.29
Friends' appearance dissatisfaction	.14**	2.98	<.01	0.42	2.04
<i>Model 3, Step 2, $F(3, 280) = 76.93, p < .001, R^2 = .45$</i>					
Appearance-RS	.64**	13.77	<.01	0.54	0.72
BMI	.03	0.63	.53	-0.16	0.31
Friends' positive appearance self-perceptions	-.09*	-2.00	.04	-2.73	-0.02
<i>Model 4, Step 2, $F(3, 280) = 76.64, p < .001, R^2 = .45$</i>					
Appearance-RS	.64**	13.87	<.01	0.55	0.73
BMI	.03	0.55	.58	-0.17	0.30
Friends' body change strategies	.09+	1.87	.06	-0.06	2.39
<i>Model 5, Step 2, $F(3, 280) = 76.68, p < .001, R^2 = .45$</i>					
Appearance-RS	.65**	14.16	<.01	0.56	0.73
BMI	.04	0.78	.44	-0.14	0.33
Friends' extreme weight-loss behaviours	.08+	1.89	.06	-0.09	4.30
<i>Model 6, Step 2, $F(3, 280) = 75.98, p < .001, R^2 = .44$</i>					
Appearance-RS	.65**	14.16	<.01	0.56	0.74
BMI	.03	0.55	.59	-0.17	0.31
Friends' BMI	.07	1.55	.12	-0.08	0.71

+ $p = .06$. * $p < .05$. ** $p < .01$.