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Individual and Sociocultural Influences on Pre-Adolescent Girls' Appearance Schemas and Body Dissatisfaction

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Appearance schemas, a suggested cognitive component of body image, have been associated with body dissatisfaction in adolescent and adult samples. This study examined girls' weight status (BMI), depression, and parent, sibling, peer, and media influences as predictors of appearance schemas in 173 pre-adolescent girls. Hierarchical regression results indicated that appearance schemas scores were associated with girls' level of depression, perceptions of parental influence on weight concerns, appearance related interactions with other girls, and awareness of media messages; perceptions of sibling influence on weight concerns and BMI were not independent predictors. In addition, appearance schemas were associated with girls' level of body dissatisfaction. One implication of these findings is for prevention programs to focus on reducing the importance and value that girls place on appearance by targeting social influences, particularly parental influence, in order to reduce risk for adolescent body dissatisfaction and related risk behaviors.

KEY WORDS: Body dissatisfaction; appearance schemas; sociocultural influence; pre-adolescent girls.

INTRODUCTION

Body dissatisfaction, which is considered normative among adolescent females and adult women, has been reported among pre-adolescent girls (Davison *et al*., 2003; Sands and Wardle, 2003; Vander Wal and Thelen, 2000b), suggesting that girls are engaging in negative appearance evaluation prior to adolescence. Reports of body dissatisfaction during pre-adolescence are of concern for a number of reasons. Most noteworthy is the association of body dissatisfaction with eating pathology. Body dissatisfaction is considered a robust predictor of eating pathology, particularly bulimic symptoms (Stice, 2002) and is one of the core diagnostic components for eating disorder diagnoses. Body dissatisfaction has also been linked to increases in depression (Stice and Bearman, 2001; Stice and Shaw, 2003) and Ohring *et al*. (2002) report that individuals experiencing chronic body dissatisfaction throughout early adolescence experience higher levels of negative affect and disordered eating into early adulthood in comparison to individuals with low or transient body dissatisfaction. Therefore, if young girls are set on a trajectory of body dissatisfaction prior to adolescence, it is probable that they will be at increased risk at an early age for these additional outcomes.

The consequences associated with body dissatisfaction suggest a need to delineate the underlying mechanisms associated with the etiology and emergence of decreased body dissatisfaction. While several studies have investigated predictors of body dissatisfaction, there is a need to better address the cognitive processes that relate to the decision to engage in negative appearance evaluations. Prevention programs may be more effective when targeting the processes underlying body image concerns. Therefore, it is necessary to better understand factors associated not just with body dissatisfaction but also with related underlying mechanisms.

This study addresses some of these suggestions by studying appearance schemas, a cognitive process

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associated with body dissatisfaction, in 11-year-old girls. The specific aims of the study are (1) to evaluate both the association between girls' level of body dissatisfaction and level of appearance schematicity and the associations of these two constructs with additional individual and contextual variables, (2) to compare girls with high and low levels of appearance schemas on these individual and contextual variables, and (3) to evaluate a hierarchical regression model using these variables to predict girls' appearance schema scores.

Appearance Schemas and Body Dissatisfaction

The concept of appearance schemas is based on work on self-schemas from Markus (1977). Individuals use self-schemas as a means to provide structure and organization to the cognitive evaluation of self-relevant information. Self-schemas, which arise from personal and social experiences, include a number of domains within individuals. Appearance schemas reflect one such domain. Specifically, appearance schemas reflect a cognitive component of body image and specifically refer to generalizations about the role of appearance, particularly the importance and meaning placed on appearance, in an individual's life (Cash and Labarge, 1996). As Cash *et al*. (2004) state, appearance schemas are central to typical body experiences within individuals. Agreement with statements such as 'My appearance is an important part of who I am,' 'Attractive people have it all,' and 'My appearance is one of the first things people notice about me' are indicative of high levels of appearance schematicity and reflect level of appearance importance and (over)valuation (Cash and Labarge, 1996).

Appearance schemas are believed to influence body dissatisfaction by heightening focus on, recall of, and incorporation of appearance relevant messages (Altabe and Thompson, 1996; Geller *et al*., 1997; Hargreaves and Tiggemann, 2003; Lavin and Cash, 2001). Other studies evidence the expected association between this construct and body dissatisfaction (Altabe and Thompson, 1996; Cash and Labarge, 1996; Geller *et al*., 1997). In addition, Hargreaves and Tiggemann (2002) found appearance schemas predicted change in body dissatisfaction over time when controlling for baseline body dissatisfaction, providing support for the argument that reducing heightened levels of appearance schemas may increase body dissatisfaction.

Hypothesized Predictors of Appearance Schemas

Despite the wealth of research supporting the validity of appearance schemas as a component of body dissatisfaction, there are few studies providing a description of this construct in pre-adolescent girls and no studies assessing predictors of this specific construct. However, other studies suggest that individual and sociocultural variables are associated with body dissatisfaction and related constructs (Blowers *et al*., 2003; Presnell *et al*., 2004; Stice and Shaw, 2002), providing a basis for the inclusion of individual and sociocultural variables in the current study. In addition, ecological systems theory highlights the role of both individual and contextual factors as relevant to studies of developmental outcomes (Bronfenbrenner and Morris, 1998). Finally, as previously mentioned, self-schema theories indicate personal and social experiences impact schema development.

Weight Status

Sands and Wardle (2003), Vander Wal and Thelen (2000a), and Blowers, *et al*. (2003) all report a positive association between elevated body mass indices (BMI) and body dissatisfaction in pre-adolescent girls. Weight status is also associated with self-evaluations in girls, suggesting weight status may also be relevant to self-schemas within girls. Davison and Birch (2002) provide evidence of an association between weight status and several domains of self-concept so that girls with elevated BMI at ages 5 and 7 reported lower self-concept. Similarly, Burrows and Cooper (2002) report that overweight girls in their study had greater negative appearance related self-esteem in comparison to non-overweight girls. This study builds on these findings by examining whether weight status is associated with heightened levels of appearance schemas in girls.

Depression

Negative mood may be associated with a general cognitive bias that may lead individuals with higher signs of depression to both perceive their bodies as less than ideal and to also elicit, value, and internalize messages that reinforce this belief. McCabe and Ricciardelli (2003) found depression, along with social influence variables, to be associated with pre-adolescent girls' reported intentions to lose weight and overweight concerns. The association with reported intentions, not just actual behaviors, suggests that depression may be associated with underlying cognitive processes relevant to weight and appearance concerns. This study will examine this possibility.

Sociocultural Pressure

Sociocultural influence on appearance schematicity and related body dissatisfaction is best understood when multiple sources are accounted for. The current study focuses on perceptions of parent and sibling influence on girls' weight concerns, appearance related interactions with girls, and awareness of media messages, which have all been linked to level of body dissatisfaction (Stice and Shaw, 2002).

There is also some work indicating these constructs may also be associated with appearance schemas. Crocker and Wolfe (2001) suggest that contingencies of self-worth, which may relate to appearance evaluations for some, often develop in response to contextual factors. Consistent exposure to certain messages within family and peer relationships may become the basis for an individual's contingencies of worth and self-schema development. In addition, few studies of appearance concerns assess the role of siblings despite evidence that sibling relationships are relevant to studies of weight concerns (McHale *et al*., 2001). It may be that siblings influence girls' level of appearance schematicity by modeling parental behaviors and comments about appearance and weight. This study will examine the role of parents, siblings, and peers in order to examine, if these relationships are associated with level of appearance schemas in girls.

In regard to media influence, Hargreaves and Tiggemann (2003) have found that viewing appearance related television commercials in an experimental setting heightened appearance schema activation in early adolescent girls (ages 13–15 years). This finding is of interest, as it suggests the possibility that some individuals may experience chronic body dissatisfaction due to consistent activation of appearance schemas through daily or frequent exposure to media images. The current study extends this work by examining the association between girls' awareness of media messages and level of appearance schematicity outside of experimental manipulation. It is expected that awareness of media messages will also be associated with higher levels of appearance schematicity in girls.

Building on the current literature, this study examines three hypotheses. First, based on the discussed research and theory, it is hypothesized that appearance schemas, body dissatisfaction, and the described individual and contextual variables will be associated with one another. Second, it is hypothesized that girls high on appearance schematicity will have higher body mass indices and greater depression scores and will report perceiving and experiencing greater parental, sibling, peer, and media influence on their appearance concerns in comparison to girls with lower levels of appearance schemas. Finally, following ecological systems theory and self-schema research, it is hypothesized that the combination of these individual and contextual variables will predict a significant proportion of variance in girls' appearance schema scores within a hierarchical regression model.

METHODS

Participants

Participants included 173, 11-year-old girls (mean age 11.34 ± 0.3) enrolled in an ongoing longitudinal study of the health and development of girls. Eligibility criteria for girls' participation at the time of recruitment (age 5) included living with both biological parents, the absence of severe food allergies or chronic medical problems affecting food intake, and the absence of dietary restrictions involving animal products; families were not recruited based on weight status or concerns about weight. Families were recruited for participation in the study using flyers and newspaper advertisements. In addition, families with age-eligible female children within a 5-county radius received mailings and follow-up phone calls. Families are generally from middle-class backgrounds and are non-Hispanic Caucasian. Only data obtained when girls were 11-years-old were used in this study.

Procedure

During each wave of data collection, girls visited the lab for two one-day "camp visits" during the summer, with six girls visiting the lab on a typical data collection day. Each girl was individually interviewed by a trained interviewer and throughout the day the girls answered a variety of questions related to their appearance and body concerns, depression, and experiences with social (i.e., family, peer, and media) influence on their weight and appearance concerns. Anthropometric measurements, including those used to determine BMI, were taken during the second visit.

Measures

Appearance Schemas

Girls' beliefs and assumptions about the importance, meaning and effects of appearance in one's life were assessed using the appearance schemas inventory (ASI) developed by Cash and Labarge (1996). For purposes of this

study 13 out of the original 14 items were included. In addition we removed the ''neutral'' response option and reduced the scale to a four-point scale. Example items include: ''The way someone looks on the outside says a lot about who a person is inside'' and ''What I look like is an important part of who I am.'' Response options ranged from 1 (*very false*) to 4 (*very true*). Higher scores indicate a stronger belief that appearance is influential and central to self-evaluation, greater vulnerability to appearance relevant messages, and greater assumption that social goodness/badness is linked to attractive/unattractive appearance. Previous research using a sample of 274 college women supports the internal consistency ($\alpha = 0.84$) and concurrent validity of the ASI; higher scores were associated with less favorable appearance evaluations, more frequent body-image dysphoria, and a stronger cognitive-behavioral investment in appearance (Cash and Labarge (1996)). Internal consistency for the present study was $\alpha = 0.83$.

Body Dissatisfaction

The adolescent/adult version of the body esteem scale was used to assess body dissatisfaction (Mendelsohn *et al*., 2001). Items used for this study assessed girls' appearance related body dissatisfaction (i.e., general feelings about appearance) and weight related body dissatisfaction (i.e., weight satisfaction). For discussion purposed, scores were reverse coded so that higher scores indicate body dissatisfaction. A mean score was calculated by summing all scores. Mendelsohn *et al*., 2001 provide information on the reliability and validity of this measure and report internal consistency scores of: 0.81–0.94. Internal consistency for this sample was $\alpha = 0.92$.

Predictor Variables: Individual Characteristics

Weight Status (BMI)

Girls' height (to the nearest 0.5 cm) and weight (to the nearest 0.1 kg) were measured by a trained staff member. BMI (weight (kg)/height (m^2)) scores were generated based on height and weight measurements. BMI *z*-scores, which are appropriate for studies using BMI within one age group, were then calculated using recent data from the Centers for Disease Control and Prevention (Kuczmarski *et al*., 2000).

Depression

The 27 item Children's Depression Inventory (Kovacs and Beck, 1977) was used in this study to assess girls' levels of depression. Item examples include, "I like myself," "I do not like myself," and "I hate myself." Scores range from 0 to 52 with higher scores (>19) indicating a higher severity of depression. Prior research reported test-retest reliabilities between 0.50 and 0.72 and Cronbach's alpha of >0.80 (Smucker *et al*., 1984). For this sample, the total depression had a reliability coefficient of 0.78.

Predictor Variables: Social Influence

Perceptions of Family Influence on Weight Concerns

Girls' perceptions of parental concern about weight were assessed using a questionnaire based on the Risk Factor Survey developed by Taylor *et al*. (1998). Questions assessed if parents ever tried to lose weight, the importance parents placed on daughters being thin, encouragement of weight loss, and if parents ever teased or criticized the girl about her weight. The same questions were asked about siblings. Responses were on a four-point scale from 1 (*really no*) to 4 (*really yes*). Internal consistency was 0.73 for the parent scale and 0.60 for the sibling scale. Both parental and sibling influence on weight concerns were associated with girls' weight concerns ($r = 0.54$, $p < 0.001$; $r = 0.55$, $p < 0.001$) and maternal reports of encouragement to lose weight were associated with girls' perceptions of parental influence on weight concerns ($r = 0.62$, $p < .001$), providing support for the validity of this measure.

Appearance Related Interactions with Peers

The interaction subscale of the Inventory of Peer Influence on Eating concerns (Oliver and Thelen, 1996) was used to assess the frequency with which girls interact with their females friends about weight and appearance issues (i.e., ''Girls and I compare the size and shape of our bodies''). The scale includes five items with responses ranging from 1 (*never*) to 5 (*a lot*). Oliver and Thelen, 1996 report an internal consistency coefficient of $\alpha = 0.80$ and found that girls who interacted more with their peers about body issues had a higher drive for thinness. Internal consistency for this sample was $\alpha = 0.80$.

Media Messages

The awareness subscale of the multidimensional media influence scale (MMIS) (Cusumano and Thompson,

2001)was used to assess girls' recognition of the cultural ideal of thinness contained in the mass media. Responses for the three items range from 1 (*strongly disagree*) and 4 (*strongly agree*). Using a sample of pre-adolescent girls ($n = 107$) Cusamano and Thompson reported an internal consistency for the awareness subscale of $\alpha = 0.74$ and found awareness of media messages to be associated with the girls' reported body dissatisfaction. For this sample, internal consistency was $\alpha = 0.80$.

RESULTS

Sample Description

An overview of the sample is presented in Table I. In general, the mean score for body dissatisfaction ($M = 1.8$) was similar to values reported by Davison *et al*., 2003 for 9-year-old girls. Approximately 26% of girls had mean scores corresponding to often or always disliking their bodies and an additional 35% reported sometimes liking their bodies. Sands and Wardle (2003) report a similar range of body dissatisfaction within their sample of 9–12-year-old girls. In regard to appearance schemas, past research on this construct with college age females (Cash and Labarge, 1996) reported a mean score of 2.5. The mean score for appearance schemas ($M = 2.0$) for the current study was somewhat lower. Age and developmental differences likely account for this difference. In addition, other studies (e.g., Hargreaves and Tiggemann, 2003) often report on appearance schema scores after exposure to an experimental manipulation designed to activate appearance schemas. This study had no such manipulation, which may also explain mean score differences.

Girls' BMI *z*-scores were slightly higher than national averages (Kuczmarski *et al*., 2000) and girls' depression scores were, on average, low. In addition, girls perceived average to low parental and sibling influence in their weight concerns, though the range suggests that some girls did perceive higher levels of influence on these concerns from parents and siblings; girls perceived slightly more influence from their parents than their siblings. Similarly, girls reported typically few appearance related interactions (i.e., comparison of bodies) with other girls. Finally, girls were relatively unaware of media messages about appearance, though the range of values again suggests that some girls were aware of such messages.

Table I. Sample Description

Variables	Mean (SD)	Range
Appearance schemas	2.0 (0.4)	1–0.3.5
Body dissatisfaction	1.8 (0.4)	1–4
Predictor variables		
BMI	19.0	14.3–28.7
Depression	3.7 (3.5)	1–17
Parental influence	1.6 (0.4)	1–3
Sibling influence	1.4 (0.5)	1–3
Interactions with girls	1.5 (0.7)	1–4.2
Media awareness	1.5 (0.6)	1–3

Hypothesis One: Associations among Body Dissatisfaction, Appearance Schemas, and Predictor Variables

The first hypothesis indicates an expected negative association between girls' level of appearance schematicity and level of body dissatisfaction. Based on previous literature, individual variables, including weight status and depression, and sociocultural variables, specifically parent, sibling, peer, and media influences, were also hypothesized to be associated with girls' appearance schemas and body dissatisfaction. Two sets of Pearson correlations were calculated to assess associations between the predictor variables and appearance schemas and body dissatisfaction; one presenting the correlations among all variables and the second presenting the same associations while controlling for girls' BMI *z*-scores. Correlations among the predictor variables themselves were also calculated in order to assess potential multicollinearity and covariance issues.

As presented in Table II, girls' appearance schemas and body dissatisfaction at age 11 were moderately correlated so that girls high on appearance schemas had greater body dissatisfaction. In regard to individual characteristics, body dissatisfaction was associated with girls' BMI, *z*-score at each age so that as girls' weight status increased, their body dissatisfaction increased. There was a trend ($p = 0.09$) for girls' BMI *z*-scores to be associated with appearance schemas. Girls with higher depression scores had greater internalization of appearance messages and higher body dissatisfaction scores at age 11.

In general, sociocultural variables had weak to moderate correlations with girls' appearance schemas (*r*'s ranged from 0.22 to 0.40) and moderate correlations with body dissatisfaction (*r*'s ranged from 0.41 to 0.50). As girls perceived greater parental and sibling influence, and had more appearance interactions with peers, both their body dissatisfaction and appearance schemas increased. Awareness of media messages was also associated with the two outcome variables; girls who perceived more messages had higher appearance schema and body dissatisfaction scores.

Table II. Associations Among Predictors and Outcome Variables

	1	2	3	4	5	6	7	8
1. Body dissatisfaction	1.00	0.42*** (0.40***)	0.46***	0.45*** (0.41***)	0.47*** (0.32***)	0.41*** (0.31***)	0.40*** (0.39***)	0.50*** (0.49***)
2. Appearance schemas	—	1.00	0.12	0.40*** (0.40***)	0.33*** (0.30)	0.22* (0.22*)	0.40*** (0.40)	0.40*** (0.39***)
3. BMI *z*-score	—	—	1.00	0.17*	0.44***	0.33***	0.13	0.19*
4. Depression	—	—	—	1.00	0.29** (0.23)	0.30** (0.27)	0.29** (0.26**)	0.27** (0.26**)
5. Parental influence	—	—	—	—	1.00	0.45*** (0.45***)	0.24* (0.22*)	0.29** (0.23**)
6. Sibling influence	—	—	—	—	—	1.00	0.22* (0.22*)	0.30** (0.26**)
7. Peer appearance interactions	—	—	—	—	—	—	1.00	0.32*** (0.32***)
8. Media awareness	—	—	—	—	—	—	—	1.00

Note. Correlations controlling for age 11 BMI *z*-score in parentheses.
*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$.

When controlling for girls' BMI *z*-scores, correlations pertaining to girls' body dissatisfaction and both their depression scores and their perceptions of parental and sibling influence on weight concerns were somewhat reduced; associations between body dissatisfaction and both media and peer variables were unchanged. In general, additional correlations, including those involving appearance schemas, were, in general, unchanged.

Hypothesis Two: Girls High and Low on Appearance Schemas will Differ on Individual and Contextual Variables

The correlation matrix suggests a number of variables are associated with higher appearance schemas scores and that girls' BMI *z*-scores should be accounted for when examining some aspects of social influence on girls' appearance schemas. To address the second hypothesis, girls high and low on appearance schemas were then compared using one-way analysis of covariance (ANCOVA), controlling for girls' BMI *z*-scores, in order to determine if these groups differed on depression, body dissatisfaction, and sociocultural variables. Girls were first categorized based on their level of appearance schemas at age 11; a median split was used to create high ($n = 90$) and low ($n = 83$) groups. ANCOVA results and means and standard deviations for each group are presented in Table III.

As expected, when controlling for girls' weight status, girls low on appearance schemas had lower body dissatisfaction and lower depression scores. In other words, girls high on appearance schemas had higher depression and, more specifically, less satisfaction with their bodies than girls low on appearance schemas.

The two groups were also compared on experiences with social influences on weight and body concerns. The two groups differed on perceptions of parent and sibling influence on weight concerns, on level of appearance related interactions with girls, and on awareness of media messages about appearance; girls high on appearance schemas perceived more influence from parents and siblings on their weight concerns, had more appearance related interactions with other girls, and were more aware of appearance related messages from the media even when controlling for weight status.

Table III. Comparison of Girls High and Low on Appearance Schemas

Variable	Low appearance schemas mean (SD)	High appearance schemas mean (SD)	*F*-value
Body dissatisfaction			
Body dissatisfaction	1.5 (0.40)	2.1 (0.42)	17.59***
Psychological influence			
Depression	2.61 (2.93)	4.18 (3.79)	9.18**
Family influence			
Parental influence	1.51 (0.34)	1.71 (0.44)	10.16**
Sibling influence[a]	1.32 (0.45)	1.54 (0.55)	4.63*
Peer influence			
Appearance interactions	1.26 (0.37)	1.75 (0.76)	23.76***
Media influence			
Media awareness	1.30 (0.47)	1.74 (0.64)	20.67***

Note. Controlling for girls' BMI *z*-scores.
[a]14 girls did not have a sibling.
$^{**}p < .01$; $^{***}p < .001$.

Hypothesis Three: A Combination of Individual and Contextual Variables will Predict Appearance Schema Scores

Though the ANCOVA results suggest that girls high on appearance schemas differ on depression and family, peer, and media variables pertaining to appearance and weight concerns, the next step is to determine the unique contribution of these predictor variables while controlling for the other predictors, which tests the final hypothesis. Hierarchical regression was used to test the third hypothesis, which states that a combination of individual and sociocultural variables will predict girls' appearance schemas scores.

Individual variables (BMI *z*-score and depression) were entered in the first two steps; girls' perceptions of parent and sibling influence on weight concerns were entered next (Step 3), followed by girls' reports of appearance related interactions with other girls (Step 4) and girls' awareness of appearance relevant messages (Step 5). Order of entry follows ecological systems theory, which suggests that individual characteristics have the strongest impact on development, followed by the more immediate family and peer environments and then broader cultural influences (i.e., media).

As presented in Table IV, the first step accounted for a small amount of variance (2%) and there was a trend for both BMI *z*-score and change in R^2 to be significant at entry. With the inclusion of depression in Step 2, another 17% of the variance in the outcome scores was accounted for so that Steps 1 and 2, in this model, accounted for 19% of the outcome score variance. The next three steps contained sociocultural influence variables. Step 3, which included both perceptions of parental and sibling influence on girls' weight concerns, accounted for an additional 5% of the variance in the appearance schemas scores; however, only perceptions of parental influence, and not

Table IV. Hierarchical Regression Results Predicting Appearance Schemas

Variable	R^2	ΔR^2	F-value for ΔR^2	β at entry
Step 1. Weight status	0.02	0.02	2.90	
BMI z-score				0.14
Step 2. Psychological health	0.19	0.17	28.12***	
Depression				0.42***
Step 3. Family influence	0.24	0.05	3.97**	
Parental influence				0.23*
Sibling influence				0.04
Step 4. Peer influence	0.37	0.13	26.09***	
Appearance interactions with girls				0.37***
Step 5. Media influence	0.41	0.04	12.08***	
Media awareness				0.26***

*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$.

sibling influence, had a significant p-value at entry. With the addition of appearance related interactions with girls in Step 4, another 13% of the outcome score variance was accounted for. The final step, which included girls' awareness of media messages about appearance, accounted for an additional 4% of model variance.

To summarize, this model accounted for a total of 41% of the variance in appearance schemas scores; individual (i.e., weight status and depression; Steps 1 and 2) accounted for 19% of the variance in outcome scores and sociocultural variables (i.e., family, peer, and media; Steps 3–5) accounted for 22% of this variance. Entry of each variable, excluding girls' BMI z-score and perceptions of sibling influence, had a significant p-value at entry and steps 2–5 all accounted for a significant change in R^2.

DISCUSSION

This study adds to work suggesting that some pre-adolescent girls do report a heightened level of body dissatisfaction (Davison *et al*., 2003; Sands and Wardle, 2003). Results also add to the body of research indicating that individual and contextual influences are associated with body dissatisfaction. The expected associations between girls' weight status, depression, and parental, sibling, peer, and media constructs and girls' level of body dissatisfaction were present. Specifically, body dissatisfaction increased as weight status and depression increased and as girls' reported greater influence on their appearance concerns from parents, siblings, peer, and media messages. These associations support previous findings (i.e., Blowers *et al*., 2003; Field *et al*., 2001; Levine *et al*., 1994; Oliver and Thelen, 1996; Paxton *et al*., 1999; Pike and Rodin, 1991; Sands and Wardle, 2003; Vander Wal and Thelen, 2000b;Wertheim *et al*., 1997). The association between body dissatisfaction and perceptions of sibling influence indicates that future investigation of the impact of siblings on body image is warranted (McHale *et al*., 2001). Factors relevant to body dissatisfaction in adolescent girls may exert, during pre-adolescence, a developmental influence that heightens risk for adolescent body image concerns prior to expected increases and peaks in adolescent body dissatisfaction.

Results also indicate that appearance schemas 11-year-old girls are associated with body dissatisfaction. As hypothesized, girls who had higher appearance schemas scores had lower body dissatisfaction scores, suggesting that cognitive processes relevant to the internalization of and heightened valuation of appearance concerns are associated with body dissatisfaction (Cash and Labarge, 1996). This association supports past findings which have found that individuals who value and place importance upon appearance experience less body dissatisfaction (Cash and Labarge, 1996; Hargreaves and Tiggemann, 2002) and expands this finding to a younger sample. Findings also suggest that variables traditionally associated with lower body dissatisfaction are also associated with level of appearance schemas in pre-adolescent girls. Though not examined in the current study, others have suggested causal models in which sociocultural variables predict thin-ideal internalization, which in turn leads to body dissatisfaction over time (Blowers *et al*., 2003; Sands and Wardle, 2003). These proposed models potentially explain why this study found individual and contextual variables to be similarly associated with both appearance schemas and body dissatisfaction.

Weight Status, Depression, and Appearance Schemas

The current study failed to find the hypothesized association between appearance schemas and body mass index (BMI). This is similar to Blowers *et al*. (2003), who found that BMI did not moderate the association between thin ideal internalization and body dissatisfaction. However, in both the current study and in Blowers *et al*.'s study, weight status was associated with body dissatisfaction, supporting past research that has found that overweight girls report wanting to be thinner (Burrows and Cooper, 2002; Oliver and Thelen, 1996; Rolland *et al*., 1998). Therefore, it may be that girls with elevated weight status may not need to place a heightened value or importance on appearance in order to engage in negative appearance evaluations.

As expected, girls high on appearance schemas had higher concurrent depression scores and these scores

predicted appearance schemas scores in a hierarchical regression model. Though directionality cannot be discussed, it may be that those with elevated signs of depression are more likely to internalize messages pertaining to self-evaluations, such as those related to appearance, and/or are more likely to internalize and incorporate such appearance messages into self-evaluations. In other words, appearance schemas may be part of a larger cognitive bias related to generally negative self-evaluations. However, it should be noted that two studies (Presnell *et al*., 2004; Stice and Whitenton, 2002) have not found negative affect to predict change in body dissatisfaction over time in older adolescent females though McCabe and Ricciardelli (2003) did find negative affect to be associated with girls' intentions to lose weight using a pre-adolescent sample. Therefore, further elaboration on the longitudinal association between pre-adolescent negative affect, appearance schemas, and later body image concerns is needed.

Family, Peer, and Media Influence and Appearance Schemas

In addition to these individual characteristics, several contextual variables were hypothesized to be associated with heightened appearance schemas. Within a hierarchical regression model, these variables accounted for approximately 22% of the variance in appearance schema scores. Blowers *et al*. (2003) found similar contextual variables to account for 33% of the variance in thin-ideal internalization within a 10–13-year-old girls. The current study included individual variables, which were entered ahead of the contextual variables, which may explain the slightly smaller proportion of variance attributed to contextual variables in the present study.

This study found girls' perceptions of parental influence on weight concerns to be associated with girls' level of appearance schemas. Parents exert a particularly salient developmental influence on children and adolescents such that children and adolescents tend to reflect the same general values as their parents (Bronfenbrenner and Morris, 1998; Crocker and Wolfe, 2001). It has been theorized that family environments focused on appearance and that promote societal messages about appearance (i.e., the thin ideal) may increase body dissatisfaction by basing family acceptance and/or approval on the achievement of such standards and values (Lalibertè *et al*., 1999). Such pressure likely leads to the development and activation of appearance schemas within individual family members. Therefore, parents who promote adherence to appearance standards and who value appearance likely heighten a child's internalization and valuation of such standards, which could lead to body dissatisfaction over time.

This study also examined the role of siblings in order to account for additional sources of influence on appearance schemas within the family environment. This study found sibling influence on weight concerns to be associated with higher appearance schematicity in girls. However, this construct was not an independent predictor of appearance schema scores when entered into the same model with perceptions of parental influence. The limited nature of the sibling variable in this study, which did not account for sibling gender or age, may explain the lack of significant prediction. Siblings may instead reinforce girls' perceptions of parental messages, which may account for the lack of independent contribution of perceptions of sibling influence in this study.

In support of hypotheses, appearance related interactions with other girls were associated, in this study, with girls' appearance schemas. This supports a growing body of evidence suggesting that girls do engage in appearance related conversations and activities and that peers may promote a culture of thinness or dieting (Jones, 2004; Levine *et al*., 1994; Oliver and Thelen, 1996; Paxton *et al*., 1999; Vander Wal and Thelen, 2000b). McCabe and Ricciardelli (2005) also suggest that peers do matter in studies of body dissatisfaction as they may reinforce and perpetuate the importance of appearance standards and ideals; peers then may be reinforcing the additional sources of influence (parent and media) relevant in this study. Future studies should investigate if peers promote additional messages and/or if they serve more to reinforce other sources relevant to appearance concerns.

The current study also found that awareness of media messages was related to girls' appearance schemas, adding to a growing body of research suggesting media influence on body dissatisfaction and related appearance concerns (Blowers *et al*., 2003; Field *et al*., 2001; Vander Wal and Thelen, 2000b; Wertheim *et al*., 1997). While most individuals are exposed to media messages extolling the thin ideal and related appearance standards, not everyone experiences body dissatisfaction. Therefore, the finding that awareness of media messages heightens appearance schemas may aide in better understanding the role of the media in the development of body dissatisfaction. It may be that the media exerts an influence on body dissatisfaction within individuals with high levels of appearance schemas.

Limitations

The described results suggest that appearance schemas may mediate the association between individual

and sociocultural variables and level of body dissatisfaction. Blowers *et al*. (2003) found internalization of the thin ideal to partially mediate associations between sociocultural variables and body dissatisfaction in girls. However, such analyses are best conducted with longitudinal data so this study was unable to examine this possibility.

The ability to generalize our findings is limited due to the nature of the sample, which was comprised of primarily non-Hispanic white girls from the Central Pennsylvania region. Findings, therefore, cannot be generalized to males or to other ethnic or racial groups or to low income populations. The use of data from one time point also limits the ability to make causal arguments in regard to the etiology of appearance schemas in girls. In addition, additional variables not considered in this study may also contribute to an understanding of appearance schemas and body dissatisfaction. Finally, in terms of measurement limitations, the use of self-report data introduces the possibility of bias within the data. Incorporation of additional methodology, such as observational methods, and data collection procedures, such as qualitative interviews or data from additional family members, may add to the strength of future studies. Furthermore, Cash *et al*. (2004) recently published a revised version of the Appearance Schemas Inventory while this study used the original version. Differences between these measures could lead to different results and could limit comparisons among studies over time.

Implications

The construct of appearance schemas suggests that some girls may come to base their self-worth and/or identity on a their appearance, which is largely dependent upon external reinforcement and social comparison and may be detrimental over time (Crocker and Wolfe, 2001; Harter, 1998). If girls have begun to place a heightened value on appearance and may be basing components of their self-concept on appearance prior to puberty, when physical changes typically move girls further from an ideal body shape, young girls with elevated appearance schemas may be at particular risk for chronic body dissatisfaction and related eating pathology.

Prevention efforts should on reducing the internalization and overvaluation that girls place on appearance, not just thinness, prior to and during the transition to adolescence in order to reduce the risk for heightened body dissatisfaction, disordered eating, and/or steroid abuse. Hargreaves and Tiggemann (2002) suggest that appearance schemas may be stable by late adolescence, which suggests that early intervention and reduction of appearance schemas is warranted.

These findings imply that prevention programs emphasizing the promotion of girls' awareness of other talents and abilities might promote healthy bases of self-concept and self-worth during the transition to adolescence. Such interventions could reduce the chance of girls basing their self-concept only on external sources and only on their appearance, thereby reducing body dissatisfaction. In addition, appearance schemas were influenced in this study by normative, possibly daily, experiences and relationships, suggesting that these influences are not transient and are part of an individual's general development. Reducing the promotion of appearance values within a developmentally relevant relationship, such as the parent–child relationship, may then reduce the likelihood that girls will be primed to respond to additional appearance messages from peers and the media.

In conclusion, given the increasing evidence that adolescent girls are concerned not just with thinness but also with muscularity (Field *et al*., 2005), it is important to evaluate the development of a range of appearance concerns, not just concerns about thinness. Results from the current study suggest that individual and contextual factors should be considered in such studies. Factors found to be pertinent to an individual's internalization of appearance concerns may be inter-connected so that both individual traits and contextual sources become part of a wider body of appearance influence and information within an individual's daily life (Sands and Wardle, 2003). Such consistent and pervasive exposure to appearance messages likely impacts the level of importance that girls place on their appearance, which in turn impacts developmental outcomes, such as body dissatisfaction and risk for later disordered eating.

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