Interpersonal and intrapersonal links to body appreciation in college women: An exploratory model

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A B S T R A C T

Based on theory and findings from qualitative and quantitative research, we developed and investigated a model of positive body image. This model placed body appreciation in a mediating role, linking interpersonal (caregiver eating messages, adult attachment) and intrapersonal (perfectionism) variables to intuitive eating and depressive symptoms. Path analysis supported our model for 249 college women. Restrictive/critical caregiver eating messages, attachment anxiety, and discrepancy (maladaptive) perfectionism inversely predicted body appreciation, while order (adaptive) perfectionism positively predicted body appreciation. In turn, body appreciation positively predicted intuitive eating but not depressive symptoms. Body appreciation was upheld as a mediator: discrepancy perfectionism, attachment anxiety, and restrictive/critical caregiver eating messages inversely predicted intuitive eating largely through their negative connection with body appreciation. These findings underscore the importance of women’s internalized messages about eating, weight, and relationships to their capacity to appreciate their body and respect it by eating according to its internal hunger/satiety cues.

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I N T R O D U C T I O N

Over a decade ago, Striegel-Moore and Cachelin (1999) pointed out that research on body image was heavily slanted towards pathology, such as identifying predictors of body dissatisfaction and body image dysfunction, and they recommended that researchers explore positive body image. Yet, limited research on positive body image has emerged to date (Tylka, 2011). Avalos, Tylka, and Wood-Barcalow (2005) argued that the study of positive body image has been stalled by an assumption that positive body image simply reflects low levels of negative body image. According to this assumption, if a characteristic (e.g., pressure for thinness) is positively related to negative body image, then it should be negatively related to positive body image to the same degree. However, predictors of positive body image are not the mirror opposite of predictors of negative body image (Tylka, 2011). For this reason, it would be helpful to (a) understand predictors and outcomes of positive body image maintained within a context of constant appearance-related media pressures and (b) assist individuals in recognizing what they need to aspire toward – not simply removing their negative body image to leave neutral attitudes about their body, but replacing these negative or neutral attitudes with positive and healthy attitudes. Indeed, Smolak and Cash (2011, p. 472) asserted that focusing on “positive, adaptive, or healthy body image is essential to the future of the field.”

One dimension of positive body image that has received research attention is body appreciation. Body appreciation includes favorable opinions of the body (despite actual weight/body size and perceived imperfections), awareness and attention to the body’s needs, engagement in healthy behaviors to take care of the body, and protecting the body via rejecting unrealistic media body ideals (Avalos et al., 2005). In two qualitative studies, college women from the U.S. (Wood–Barcalow, Tylka, & Augustus–Horvath, 2010) and adolescents from Sweden (Frišen & Holmqvist, 2010) espoused a positive body image both reported that they appreciated, accepted, and respected their bodies. Body appreciation has been found to predict several indices of psychological well-being (i.e., self-esteem, optimism, life satisfaction, and proactive coping) beyond measures of body dissatisfaction in college women, suggesting that it is more adaptive and complex than low levels of negative body image (Avalos et al., 2005). Other researchers have found that body appreciation is negatively related to restrictive/critical caregiver eating messages (e.g., “You shouldn’t eat cake; it will make you fat”; Kroon Van Diest & Tylka, 2010). cosmetic surgery attitudes (Swami, 2009), and neuroticism (Swami, Hadji-Michael, & Furnham, 2008), as well as positively related to body acceptance by others and intuitive eating (i.e., eating according to physiological hunger and satiety cues rather than situational
or emotional cues; Augustus-Horvath & Tytka, 2011; Avalos & Tytka, 2006). The next step for research on body appreciation is to include it within models of body image and eating behavior (Tytka, 2011), which was the aim of the present study. Such models could guide the development and/or refinement of primary prevention programs to foster children’s healthy body attitudes as well as help clients understand barriers to and facilitators of positive body image.

Body image often has a central role in theoretical frameworks such as objectification theory (Fredrickson & Roberts, 1997) and the tripartite influence model (Thompson, Coover, & Stormer, 1999), linking interpersonal (e.g., appearance-related pressures, and sexual objectification) and intrapersonal (e.g., internalization of the thin ideal, self-objectification) variables to outcome variables such as disordered eating and depression. We placed body appreciation in a similar position within our model in order to provide insight into (a) interpersonal and intrapersonal variables that uniquely contribute to body appreciation, (b) how interpersonal and intrapersonal variables work together to predict body appreciation, and (c) whether body appreciation positively predicts adaptive and healthy eating behaviors and inversely predicts depressive symptoms. Given its central role, we examined it as a mediator to determine whether body appreciation accounted for the contributions made by interpersonal and intrapersonal variables to depressive symptoms and intuitive eating.

When choosing the model variables, we had four aims. First, we determined whether variables identified by respondents who reported a positive body image in qualitative research (Frisén & Holmqvist, 2010; Wood-Barcalow et al., 2010) are supported quantitatively and contribute incrementally to the model, especially in their relationship to body appreciation. It is imperative to return to this qualitative research to pinpoint these variables, as they may be overlooked if we relied solely on theory and research on negative body image. Second, we investigated whether associations between variables related to negative body image were also supported in this model. If no significant associations are uncovered between these variables and body appreciation, body appreciation’s uniqueness from negative body image would be upheld. Including variables identified in qualitative research on positive body image as well as variables that have been linked to negative body image provides a more nuanced understanding of the incremental value of body appreciation and how it may differ from low levels of negative body image. Third, we wished to represent both interpersonal and intrapersonal variables within our model. Fourth, we considered whether these interpersonal and intrapersonal variables were likely to be meaningfully associated with one another, based on extant theory and research, beyond their direct connection to body appreciation.

Respondents in Wood-Barcalow et al.’s (2010) study reported interpersonal characteristics that they believed promoted their positive body image. In particular, many participants mentioned that important others in their lives, such as their parents, did not criticize their weight, food consumption, or place undue attention on their body. Other researchers have found that restrictive/critical messages of food intake (e.g., “Don’t eat so much!” and “You don’t need another piece of pizza”) backlash in that children tend to become preoccupied with forbidden foods, seek out these foods when their caregivers are not around, and eat these foods in a dis-inhibited manner in the absence of hunger (Birch, Fisher, & Davison, 2003; Faith, Scanlon, Birch, Francis, & Sherry, 2004; Fisher & Birch, 1999). Pressure to eat messages from caregivers (e.g., “You must eat everything on your plate”) also may pull individuals away from respecting their satiety cues (Galloway, Fiorito, Francis, & Birch, 2006). These two types of caregiver eating messages, then, could be interpersonal barriers to body appreciation and were therefore included in our model.

Another interpersonal characteristic noted in the responses from participants in Wood-Barcalow et al.’s (2010) study was the ability to have and establish meaningful connections and close emotional ties with family, friends, and romantic partners. Descriptions from these women were characteristic of secure attachment. According to Bowlby (1979), secure attachment reflects an ability to form and maintain strong affectionate bonds with others that begins developing in childhood. Specifically, consistent caregiver responses and support provides children with a positive template for healthy relationships. In contrast, inconsistent, unsupportive, and/or demanding caregiver responses provide children with a negative template for relationships, which manifests as insecure attachment (Bowlby, 1979). There are two subcomponents of insecure attachment: attachment anxiety, or the excessive need for approval and the fear of rejection and abandonment, and attachment avoidance, or the excessive need for self-reliance and fear of depending on others (Brennan, Clark, & Shaver, 1998). Insecure attachment, then, may be an interpersonal barrier to body appreciation and was therefore integrated in our model.

Participants in both Wood-Barcalow et al.’s (2010) study and Frisén and Holmqvist’s (2010) study also noted intrapersonal characteristics that they perceived shaped their positive body image. Participants in both studies indicated that they did not hold their bodies up to unrealistically high standards for beauty they viewed in media; instead, they rejected and challenged media images and messages to be perfect and accepted their body’s imperfections. Yet, participants in both studies indicated that they had high standards for taking care of their bodies — through consistent and healthy eating, exercising in regular physical activity, using stress management techniques, and getting adequate sleep. Thus, responses from participants in Wood-Barcalow et al.’s study and Frisén and Holmqvist’s study were consistent with low maladaptive perfectionism and high adaptive perfectionism. Perfectionism is a multidimensional construct containing both maladaptive and adaptive facets (Rice, Ashby, & Slaney, 1998). Individuals high in maladaptive perfectionism set unrealistically high standards for themselves, but then perceive a discrepancy between their high standards and their ability to meet them; for this reason, it is often referred to as discrepancy perfectionism (Rice et al., 1998). These individuals may be more likely to measure their body against unrealistic media standards of attractiveness and not be able to appreciate their body when it falls short of these standards. Indeed, maladaptive perfectionism has been shown to be positively related to body dissatisfaction (Pearson & Gleaves, 2006). In contrast, adaptive perfectionism has been divided into high standards (setting ambitious yet realistic goals that are motivational and encouraging) and order (preferences for order and organization; Rice et al., 1998). For those high in adaptive perfectionism, not being able to always meet these more realistic standards is tolerated and does not lead to distress. Hence, discrepancy perfectionism may be a barrier to, and high standards and order perfectionism facilitators of, body appreciation. Thus, all three were included in our model.

Women in the Wood-Barcalow et al. (2010) study perceived that their body appreciation helped them feel positively about themselves in the present and optimistic about their future. The positive feelings described by these participants were the antithesis of depressive symptoms (Beck, Steer, & Brown, 1996). Theoretical and empirical literature on negative body image has noted the connection between negative body image (e.g., body dissatisfaction and body shame) and depression (e.g., Fredrickson & Roberts, 1997; Stice, 2001, 2002), which may be especially true for women, as media encourage them to equate their self-worth with their appearance more so than men (Fredrickson & Roberts, 1997). We chose to include depressive symptoms in lieu of positive affect and optimism because of attachment anxiety and discrepancy
perfectionism’s established links to depression (Wei, Heppner, Russell, & Young, 2006).

Many women in Wood-Barcalow et al.’s (2010) study reported that, as a result of respecting and appreciating their body, they trusted their physiological hunger and satiety cues to determine when, what, and how much to eat and regularly chose foods that taste good and made their body function well. This intuitive style of eating, then, is one behavior that demonstrates that women appreciate, listen to, and care for their bodies, and therefore was integrated in our model. Theory and research that directed the specification of paths in our model (see Fig. 1) is presented next.

Exploratory Model

Caregiver eating messages. Restrictive/critical caregiver eating messages have been found to be negatively associated with body appreciation and negatively predict intuitive eating in college women; these trends were not found for pressure to eat messages (Kroon Van Diest & Tylka, 2010). Also, it is plausible that restrictive/critical caregiver eating messages positively predict attachment anxiety, as adults who perceived their parents as highly critical reported higher attachment anxiety, but not attachment avoidance (Rice, Lopez, & Vergara, 2005). In contrast, pressure to eat caregiver messages may positively predict attachment avoidance, as theorists (e.g., Satter, 2005) have speculated that children who are pressured to eat may develop adversarial relationships with their caregivers. Rice et al. (2005) found that adults who perceived their parents to be critical and hold unreasonable expectations scored higher on discrepancy perfectionism and lower on high standards and order perfectionism than did adults who did not perceive their parents in this manner. We proposed that parental criticism and expectations may take the form of restrictive/critical and pressure to eat eating messages, respectively, and predicted that their connections to perfectionism would therefore be supported in our model. The abovementioned paths that have been upheld in previous research and asserted in theory were specified in Fig. 1. Also, we allowed restrictive/critical and pressure to eat caregiver eating messages to covary in the model because they have been found to be positively related to one another in previous research (Kroon Van Diest & Tylka, 2010).

Attachment anxiety and avoidance. Research supports the positive paths from adult attachment anxiety and avoidance to discrepancy perfectionism (Rice et al., 2005; Wei et al., 2006). Attachment anxiety and avoidance were expected to predict different variables in the model given previous findings. Whereas attachment avoidance has been found to inversely predict both high standards and order perfectionism, attachment anxiety does not predict either dimension (Rice et al., 2005). Attachment anxiety, but not attachment avoidance, positively predicted depressive symptoms (Wei et al., 2006) and was inversely related to body satisfaction and positively related to multiple indices of negative body image (i.e., body image dysphoria, dysfunction, and investment; Cash, Thériault, & Annis, 2004), and therefore may be inversely linked to body appreciation. Because attachment anxiety and avoidance positively predicted disordered eating (Koskina & Giovanzolas, 2010), they are likely to be negatively linked to intuitive eating. We predicted that the significant paths and associations specified above would be upheld in our model. In addition, we allowed attachment anxiety and avoidance to covary because they both reflect attachment insecurity and have been found to be positively related (Rice et al., 1998, 2005).

Perfectionism. Maladaptive perfectionism has been found to be inversely associated with body esteem, whereas adaptive perfectionism is positively related to body esteem (Davis, 1997). Therefore, we expected the same patterns to emerge between discrepancy, high standards, and order perfectionism and body appreciation. Also, discrepancy perfectionism has been found to positively predict depressive symptoms (Wei et al., 2006), and high standards perfectionism (but not order) has been found to inversely predict depressive symptoms (Bamford & Halliwell, 2009; Enns, Cox, & Clara, 2002). These significant paths and associations were anticipated to emerge in our model. We further allowed high standards and order to covary; they are facets of the same adaptive perfectionism construct and have been shown to be positively related (Bamford & Halliwell, 2009; Enns et al., 2002).

Body appreciation. Body appreciation has been found to be negatively linked to neuroticism, a personality variable characteristic of depression and negative affect (Swami et al., 2008). Although body image and affect likely impact each other in a bidirectional manner, negative body image has been shown to predict increased negative affect across time (Stice, 2002). Thus, we hypothesized that body appreciation would inversely predict depressive symptoms in our model. Because body appreciation has been found to positively predict intuitive eating (Augustus-Horvath & Tylka, 2011; Avalos & Tylka, 2006), we also specified this link. We further hypothesized that body appreciation would mediate the links from perfectionism (discrepancy, high standards, and order), restrictive/critical eating messages, and attachment anxiety to both depressive symptoms and intuitive eating. If so, this would suggest that these interpersonal and intrapersonal variables would be associated with intuitive eating and depression largely to the extent women appreciate their bodies, suggesting that body appreciation is an important variable for clinical intervention.

Depression. Depressive symptoms, such as negative affect, positively predict disordered eating among women (Stice, 2001). Because intuitive eating is positively associated with indices of psychological well-being, such as positive affect, optimism, and hardiness (Tylka & Wilcox, 2006), we predicted that depressive symptoms would inversely predict intuitive eating in our model. While bivariate associations between some of the model variables have been explored, it is unknown whether each path would add unique variance to the model. Unanticipated paths could also emerge. The model was tested with these issues in mind. To achieve the most parsimonious and accurate representation of the data, we planned to trim paths that were not significant and add paths not originally specified but that substantially impact the fit of the model to the data.

Method

Participants

The final data set included responses from 249 college women from a regional campus of a large university in the Midwestern U.S. We explored our model with women only, as their experience of the model variables could differ substantially from that of men. Participants ranged in age from 18 to 28 (M = 19.1, SD = 1.7). Most identified as White/Caucasian (86.3%), followed by African American (4.8%), Latina (2.8%), Asian American (2.4%), and multiracial (2.4%); 1.2% indicated “other.” They represented first-year students (77.1%), sophomores (12.9%), juniors (5.6%), seniors (2.4%), and post-baccalaureate or graduate students (2.0%). A total of 52.6% indicated that they were single, while 39.0% were in a long-term relationship, 3.2% were engaged, 3.2% were married, and 2.0% were partnered. In terms of socioeconomic identification, 11.9% reported being working class, 55.6% endorsed middle class, 30.6% selected upper-middle class, and 2.0% indicated upper class.

Measures

Body appreciation. We used the 13-item Body Appreciation Scale (BAS; Avalos et al., 2005) to measure the extent to which
participants appreciate, accept, respect, and take care of their body regardless of its flaws and inconsistency with media ideals. Its items (e.g., “Despite its flaws, I accept my body for what it is”) are rated along a scale ranging from 1 (never) to 5 (always). Items are averaged, with higher scores indicating greater body appreciation. In a sample of U.S. college women, scores on the BAS have demonstrated a unidimensional factor structure, internal consistency reliability (Cronbach’s α = .94), stability over a 3-week period (r = .90), and construct validity via its inverse relationships to measures of body dissatisfaction and positive relationship to self-esteem (Avalos et al., 2005). For the current sample, Cronbach’s alpha was .93 for the BAS.

Caregiver eating messages. We used the 10-item Caregiver Eating Messages Scale (CEMS; Kroon Van Diest & Tylka, 2010) to assess the degree to which participants perceived that their caregivers were restrictive and critical of their food intake and pressured them to eat while they were growing up. The Restrictive Critical Messages (RCM) subscale contains five items; a sample item is “Told you that you shouldn’t eat certain foods because they will make you fat.” The Pressure to Eat Messages (PEM) subscale also contains five items, such as, “Made sure you finished all the food that was on your plate.” Its items are rated on a scale ranging from 1 (never) to 5 (always) and averaged; higher scores indicate more restrictive/critical and pressure to eat messages, respectively. In a sample of U.S. college women, the CEMS’s two-factor structure was upheld, and its scores have evidenced internal consistency reliability (Cronbach’s αs = .86 for RCM and .86 for PEM), 4-week test retest reliability (rs = .74 for RCM and .80 for PEM), and construct validity via the subscales’ positive relationships with BMI (Kroon Van Diest & Tylka, 2010). For the current sample, alphas were .85 for RCM and .86 for PEM.

Adult attachment. We used the 36-item Experiences in Close Relationships Scale (ECRS; Brennan et al., 1998) to measure the extent individuals experience attachment difficulties in their relationships. The ECRS is a result of data reduction methods (i.e., factor analysis) of items from 14 attachment measures. It contains two subscales: Attachment Anxiety (18 items; e.g., “I worry about being abandoned”) and Attachment Avoidance (18 items; e.g., “I am nervous when partners get too close to me”). Items are rated on a scale ranging from 1 (disagree strongly) to 7 (agree strongly) and averaged; higher scores indicate greater attachment anxiety and avoidance, respectively. In samples of U.S. college students, scores on the ECRS have demonstrated evidence of internal consistency reliability (Cronbach’s αs = .93 for Attachment Anxiety and .94 for Attachment Avoidance: Vogel & Wei, 2005), test–retest reliability over six months (rs = .68 for Attachment Anxiety and .71 for Attachment Avoidance; Lopez & Gormley, 2002), and construct validity via the subscales’ positive link to personal problems (Lopez, Mitchell, & Gormley, 2002) and inverse relationships to social self-efficacy and emotional self-awareness (Mallinckrodt & Wei, 2005). For the current sample, Cronbach’s αs were .89 for Attachment Anxiety and .92 for Attachment Avoidance.

Perfectionism. We used the 23-item Almost Perfect Scale Revised (APS-R; Slaney, Rice, Mobley, Trippi, & Ashby, 2001) to gauge participants’ levels of three perfectionism dimensions, one of which is maladaptive and characteristic of psychological distress (discrepancy) and two of which are adaptive (high standards and order). The Discrepant subscale contains 12 items which assess the perceived gap experienced between personal performance expectations and performance evaluations (e.g., “I am not satisfied even when I know I have done my best”). The High Standards subscale contains seven items that measure the level of performance expectations (e.g., “I set very high standards for myself”). Last, the Order subscale contains four items that assess preference for structure and neatness (e.g., “Neatness is important to me”). Items are rated on a scale ranging from 1 (strongly disagree) to 7 (strongly agree) and averaged. Higher scores indicate higher levels of the perfectionism dimension. In U.S. college students, the APS-R’s 3-factor structure has been supported, and its scores have evidenced internal consistency reliability (alphas for subscales have ranged from .82 to .91) and construct validity via its relationships to psychological adjustment (Slaney et al., 2001). For the current sample, Cronbach’s αs were .92 for Discrepancy, .89 for High Standards, and .94 for Order.

Depressive symptoms. We used the 21-item Beck Depression Inventory-II (BDI-II; Beck et al., 1996) to assess participants’ affective, cognitive, and behavioral symptoms of depression (e.g., sadness, irritability, hopelessness, pessimism, social distance, sleeping and eating problems). Each item contains four options corresponding to the degree the symptom is experienced within the last few days. Each item score can range from 0, which indicates no experience of the symptom, to 3, which indicates the full experience of the symptom. Item scores are summed, with higher levels indicating greater symptomatology. Among U.S. college students, scores on the BDI-II have demonstrated internal consistency reliability (e.g., α = .93), test–retest reliability over one week (r = .93), and construct validity via strong correlations with hopelessness.

Figure 1. Paths represented in the hypothesized model illustrating the connections between caregiver eating messages, adult attachment, discrepancy (maladaptive) perfectionism, high standards and order (adaptive) perfectionism, depression, body appreciation, and intuitive eating. The proposed direction (positive = +, negative = −) of each hypothesized path is also specified.
and another depression scale (Beck et al., 1996). For the current sample, Cronbach’s alpha was .91 for the BDI-II.

**Intuitive eating.** We used the 21-item Intuitive Eating Scale (IES; Tylka, 2006) to assess participants’ tendency to eat according to their hunger and satiety cues. It has three features: unconditional permission to eat (e.g., “If I am craving a certain food, I allow myself to have it”), eating for physical rather than emotional reasons (e.g., “I find myself eating when I am bored, even when I’m not physically hungry”), and reliance on internal hunger and satiety cues to guide the eating experience (e.g., “I trust my body to tell me how much to eat”). Subscales can be calculated to reflect these three features; however, the subscales load on a higher order intuitive eating factor (Tylka, 2006). Therefore, we chose to use the IES total scale score in lieu of subscale scores. Items are rated along a scale that ranges from 1 (strongly disagree) to 5 (strongly agree) and averaged. Higher scores indicate higher levels of intuitive eating. In samples of U.S. college women, IES scores have demonstrated evidence of internal consistency reliability (Cronbach’s α = .84–.88), 3-week test–retest reliability (r = .90), and construct validity via its negative relationships to eating disorder symptomatology and poor interoceptive awareness. For the current sample, alpha was .87 for the IES.

**Body mass index (BMI).** Participants reported their weight and height. Women, on average, reported being 65.1 (SD = 3.5) inches tall and weighing 140.0 (SD = 32.6) pounds. This information was converted to metric units and BMI was calculated (kg/m²; M = 23.1, SD = 4.8).

### Procedure

All procedures were approved by the university’s Institutional Review Board. To recruit participants, the study was posted alongside other studies on a research board in the Department of Psychology. Female introductory psychology students could select this study if they were interested in participating in exchange for class credit. They were informed that the purpose of the study was to investigate their body attitudes, personality characteristics, and eating behavior and were assured that their responses would remain anonymous. Participants completed the measures in a classroom used as a research lab. Measures were counterbalanced to control for order effects.

### Results

#### Preliminary Analyses

Twelve missing data points (i.e., single item values) were handled by substituting participants’ mean scale or subscale scores for the missing value. These missing data points were scattered among the responses rather than concentrated within one item, measure, or participant. Prior to examining the model, data were examined for normality of distribution. It has been recommended that researchers testing path analytic models should transform variables that have absolute values of skewness > 3 and kurtosis > 10 (Kline, 2005). Skewness and kurtosis values for the model variables were lower than these values (skewness range = −1.21 to 1.69, kurtosis range = −0.58 to 3.55). Therefore, no variable was transformed. Variable means, standard deviations, and bivariate correlations are presented in Table 1.

#### Test of the Hypothesized Model in Fig. 1

Because BMI was related to five model variables (i.e., restrictive/critical caregiver eating messages, attachment anxiety, depressive symptoms, body appreciation, and intuitive eating), we controlled for BMI in the model by partialing out BMI’s contribution to these variables. The number of participants (N = 249) exceeded

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<thead>
<tr>
<th>Measure</th>
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</thead>
<tbody>
<tr>
<td>1. CEMS-Restrictive/Critical</td>
<td>2.18 (1.00)</td>
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<td>2. CEMS-Panic to Eat</td>
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<td>3. CEMS-Attachment Anxiety</td>
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<td>4. CEMS-Attachment Discrepancy</td>
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<td>5. APS-R High Standards</td>
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<td>6. APS-R Obedience</td>
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<td>7. Body Appreciation Scale</td>
<td>3.62 (0.75)</td>
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<td>8. Intuitive Eating Scale</td>
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<td>9. Body Mass Index</td>
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Note: CEMS = Caregiver Eating Messages Scale; ECRS = Experiences in Close Relationships Scale; APS-R = Almost Perfect Scale Revised; BDI-II = Beck Depression Inventory-II.

* p < 0.05
** p < 0.01
*** p < 0.001.
the minimum 5:1 participants-to-parameter ratio needed to confidently examine a model (Bentler, 1990). In this study, a total of 225 participants were needed as there were 45 parameters (25 variable-to-variable paths, 10 standard error paths to the model variables, five BMI-to-variable paths, and five BMI standard error paths) in Fig. 1. Our sample size also exceeded the N ≥ 200 recommendation for complex models (Weston & Gore, 2006).

We used Mplus Version 4.1 (Muthén & Muthén, 2006) with maximum likelihood estimation to analyze the model. We determined whether the model provided an adequate fit to the data via consensus among three indices recommended by Hu and Bentler (1999): the Comparative Fit Index (CFI), the standardized root-mean square residual (SRMR), and the root mean square error of approximation (RMSEA). CFI values of ≥.95, SRMR values of ≤.08, and RMSEA values of ≤.06 indicate a good fit of the model to the data. Further, nonsignificant χ² values indicate that the model provides a good fit to the data; however, we relied on CFI, SRMR, and RMSEA to better estimate model fit because the χ² statistic is influenced by sample size (Kline, 2005).

**Examination of the structural model.** The structural model in Fig. 1 provided a good fit to the data (CFI = .98, SRMR = .04, RMSEA = .05), χ² (20, N = 249) = 30.61, p = .060. However, many paths did not contribute unique variance to the model. Pressure to eat caregiver messages did not predict discrepancy, high standards, or order perfectionism. Restrictive/critical caregiver eating messages and attachment avoidance did not predict high standards and order perfectionism. Attachment avoidance did not predict intuitive eating. High standards perfectionism did not predict body appreciation. Body appreciation did not predict depressive symptoms, and depressive symptoms did not predict intuitive eating. All other paths specified in Fig. 1 were significant, p < .05. We deleted the nonsignificant paths and reexamined the model. The fit of the trimmed model to the data (CFI = .98, SRMR = .06, RMSEA = .04), χ² (28, N = 249) = 41.36, p = .050 was not significantly different than the fit of the original model to the data, χ² difference (8, N = 249) = 10.75, p = .216. Thus, we retained the trimmed model in lieu of the original model because it was more parsimonious.

We then explored modification indices (MIs) to determine whether data reveal paths that should be estimated (Kline, 2005). One unestimated path with a large MI (≥5.00) was noted in the trimmed model: the path from attachment anxiety to order perfectionism. Therefore, this path was included, and the revised model was examined. The revised model (CFI = .99, SRMR = .04, RMSEA = .03), χ² (27, N = 249) = 31.74, p = .242 provided a significantly better fit than the trimmed model without the added path, $\chi^2_{\text{difference}} (1, N = 249) = 9.62, p = .002$, and thus was retained.

This final model with significant standardized path coefficients ($\beta$s) is presented in Fig. 2. Notably, a sizable percentage of variance (40.5%) in body appreciation was accounted for by restrictive/critical caregiver eating messages, attachment anxiety, discrepancy perfectionism, and order perfectionism. Body appreciation, along with restrictive/critical eating messages and attachment anxiety, predicted 44.4% of the variance in intuitive eating.

Substantial percentages of variance were also accounted for in the other model variables. Attachment anxiety as well as discrepancy and high standards perfectionism predicted 39.3% of the variance in depressive symptoms. Restrictive/critical caregiver eating messages, attachment anxiety, and attachment avoidance contributed 24.7% of the variance in discrepancy perfectionism. Attachment anxiety accounted for 16.4% of the variance in order perfectionism. Restrictive/critical caregiver eating messages accounted for 7.6% of the variance in attachment anxiety, and pressure to eat caregiver eating messages contributed 4.2% of the variance in attachment avoidance.

### Body Appreciation: Mediation and Indirect Effects

We examined body appreciation as a mediator between (a) discrepancy perfectionism and intuitive eating, (b) order perfectionism and intuitive eating, (c) attachment anxiety and intuitive eating, and (d) restrictive/critical caregiver eating messages and intuitive eating. If at least one path of a hypothesized indirect effect was not significant in the final model (e.g., the path from body appreciation to depressive symptoms), then it precluded mediation; therefore, the significance levels for these indirect effects were not examined.

We used Shrout and Bolger's (2002) bootstrap procedures to estimate the significance of the indirect effects. We specified Mplus to create 1000 bootstrap samples from the data set by random sampling with replacement and generate indirect effects and bias-corrected confidence intervals (CIs) around the indirect effects when analyzing the final model as presented in Fig. 2. Indirect effects ($\beta$s) are significant if the 95% CIs do not include zero. Full or partial mediation was resolved by exploring whether the direct relationship between the predictor and criterion was significant once the mediator was included in the equation. Full mediation would be upheld if this direct relationship was not significant, and partial mediation would be determined if this direct relationship was significant.

Three of the four estimated indirect effects were significant. Body appreciation fully mediated the negative link from discrepancy perfectionism to intuitive eating ($\beta = -.06, p < .01; CI = -.087 to -.033$) and partially mediated the negative links from attachment anxiety to intuitive eating ($\beta = -.02, p < .05; CI = -.047 to -.005$) and restrictive/critical caregiver eating messages to intuitive eating ($\beta = -.03, p < .05; CI = -.060 to -.007$). The indirect effect from order perfectionism to body appreciation to intuitive eating was not significant ($\beta = .02, p > .05; CI = -.001 to .032$).

### Discussion

Although many models of body dissatisfaction have been proposed and examined (e.g., Stice, 2001; Thompson et al., 1999), models of positive body image, such as body appreciation, are in their infancy (Avalos & Tylka, 2006). In this study, we explored a model including potential interpersonal (i.e., adult attachment, caregiver eating messages) and intrapersonal (i.e., maladaptive and adaptive perfectionism) barriers and facilitators to body appreciation as well as body appreciation’s ties to two indices of well-being (i.e., depressive symptoms and intuitive eating). Overall, this model provided a good foundation from which to understand college women’s body appreciation and its connection to intuitive eating. The model constructs contributed 40.5% of the variance in body appreciation.

Body appreciation played a key mediational role in the model. It fully accounted for the link between discrepancy perfectionism and intuitive eating, suggesting that maladaptive perfectionism is inversely related to intuitive eating only to the degree to which women appreciate their bodies. Body appreciation also partially accounted for the links from (a) attachment anxiety to intuitive eating and (b) restrictive/critical caregiver eating messages to intuitive eating. Therefore, when lower discrepancy perfectionism, attachment anxiety, and restrictive/critical caregiver eating messages were associated with higher body appreciation, then intuitive eating scores were higher. These mediational relationships highlight body appreciation’s central role in the model and explain how interpersonal and intrapersonal variables are connected to intuitive eating for women.

Body appreciation, however, did not contribute unique variance in depressive symptomatology. While the bivariate association
between body appreciation and depressive symptoms was significant and moderate in strength, this association was no longer significant once the contributions made by attachment anxiety, discrepancy perfectionism, and high standards perfectionism were considered. These three latter variables appear to be unique predictors of depressive symptoms, accounting for 39.3% of its variance in our model. Further, depressive symptomatology was related inversely to intuitive eating on a bivariate level but did not predict unique variance in intuitive eating once body appreciation, restrictive/critical caregiver eating messages, and attachment anxiety were considered; these three latter variables accounted for 44.4% of the variance in intuitive eating. Interestingly, Stice (2001) revealed that negative affect, which includes emotional symptoms of depression (Watson & Clark, 1994), mediated the relationship between body dissatisfaction and bulimic symptomatology. Collectively, these findings suggest that body appreciation is not the mirror opposite of body dissatisfaction, and intuitive eating is not simply the lack of eating disorder symptomatology, as they seem to have quite different (i.e., not as strong and stable) relationships with depressive symptoms.

Other notable findings were revealed. Interpersonal barriers to body appreciation include restrictive/critical eating messages and attachment anxiety. Caregivers who overtly restrict, control, and criticize their daughter’s eating as well as foster attachment anxiety may inhibit her ability to appreciate and respect her body as well as honor her body by eating intuitively. An intrapersonal barrier to body appreciation is maladaptive or discrepancy perfectionism, as it could direct women to focus on their perceived body flaws and strive toward unrealistic media images of women. Yet, an intrapersonal facilitator to body appreciation is adaptive perfectionism, specifically being neat and orderly. Respecting things by keeping them presentable, clean, and organized, as done by people high in adaptive perfectionism (Slaney et al., 2001), may translate to respecting the body by attending to its needs, engaging in healthy behaviors, and focusing on appearance strengths rather than flaws, as characterized by people high in body appreciation (Avalos et al., 2005).

In addition to body appreciation, discrepancy perfectionism played an important role in the model (i.e., inversely predicting body appreciation and positively predicting depressive symptoms, both to a moderate-to-strong degree); therefore, it is useful to highlight its predictors. Our model revealed interpersonal variables that uniquely contributed to women’s tendency to report discrepancy perfectionism. The more women perceived that their caregivers delivered restrictive/critical eating messages and promoted attachment insecurity (anxiety or avoidance), the more they reported characteristics of discrepancy perfectionism.

Other variable links are important to highlight. Caregiver eating messages were connected to insecure attachment. Women who perceived that their caregivers restricted and were critical of their food intake reported a higher need for approval and fear of rejection and abandonment (i.e., attachment anxiety) within their relationships. However, women who perceived that their caregivers pressured them to eat reported a higher need for self-reliance and fear of depending on others (i.e., attachment avoidance) within their relationships. These findings reinforce that caregivers who do not interfere with their daughter’s natural ability to self-regulate her food intake and instead allow her to follow her internal hunger and satiety cues are modeling a trusting and healthy relationship, with respect to how to relate to others and to her body (Satter, 2005). Thus, if the daughter has a template for a healthy relationship with her body, she is more likely to respect and appreciate it as well as feed it when it is hungry and stop eating when it is full.

Implications for Clinical Practice

Professionals can help caregivers understand that the messages they send to their daughter about eating, weight, and relationships are linked to how she feels about herself and her body and her ability to trust her body’s internal signals. Caregivers need to recognize that their restrictive/critical messages about food and weight hinder rather than help their daughter, in terms of their daughter’s ability to bond with others, appreciate her body, and eat according to her natural hunger and satiety cues. Helping caregivers promote their daughters’ secure attachment, such as responding in a consistent and warm manner, are very important goals for professionals (Bowlby, 1979).

Given the pivotal role of body appreciation in the model as well as the moderate-to-strong inverse link between discrepancy perfectionism and body appreciation, therapists are encouraged to incorporate interventions in their individual or group work to help women respect and appreciate their bodies via setting realistic achievable goals (e.g., “I need to feed my body nutritious foods when it is physically hungry”) rather than unrealistic and unachievable ones (“I must exercise and diet until I look like models in magazines”). To nurture body appreciation, therapists can help women (a) capitalize on their body assets rather than focus on their perceived body flaws; (b) surround themselves with others who accept their bodies, value their authentic qualities rather than appearance, and do not engage in negative body talk; (c) become
mindful of their body's needs; and (d) reject and challenge media images and messages (Tylka, 2011). Cognitive dissonance interventions, modeled after the work by Stice, Chase, Stormer, and Appel (2001), can facilitate these goals. Specifically, clients could write a paper about the costs associated with negative body image and the benefits of appreciating their body, perform role-plays where they resist pressure to engage in negative body talk and act as if they already hold a positive body image, persuade other girls and women to appreciate their body, and examine their reflection in a full-length mirror at home and record only positive aspects about their body.

Limitations and Directions for Future Research

Whereas these findings advance positive body image research, they should be interpreted in light of this study's limitations. Although we chose a combination of interpersonal and intrapersonal variables that have been identified as possibly being connected to body appreciation in qualitative research (Wood-Barcalow et al., 2010), variables not investigated in this study may also serve as interpersonal and intrapersonal barriers and facilitators to body appreciation. One such intrapersonal variable that likely would be a facilitator to body appreciation is the belief that a wide range of body types are beautiful. Broadly conceptualizing beauty emerged as a characteristic in Wood-Barcalow et al.'s (2010) qualitative study. We did not assess this construct because it does not have a corresponding measure; we encourage researchers to develop such a measure and explore its link to the model variables. Narrowly defining beauty to the thin media ideal, which has shown to be related to body dissatisfaction (Thompson et al., 1999), could have been integrated into the model, as there is a psychologically sound measure of this construct (i.e., the Sociocultural Attitudes Towards Appearance Scale-3; Thompson, van den Berg, Roehrig, Guarda, & Heinberg, 2004). Researchers could also examine body appreciation's connection to engaging in regular exercise for health-related reasons and positive affect, as they were identified by participants with positive body image (Wood-Barcalow et al., 2010). Positive affect or optimism could be studied in the model in lieu of depressive symptomatology, as they may more closely resemble the construct identified by participants in the Wood-Barcalow et al. study.

Although correlational data can provide useful groundwork for important areas where research is limited (such as models of positive body image), causal interpretations cannot be made about the sequence of model variables because data were collected in one time period. Researchers could begin to use longitudinal designs to examine the proposed temporal relations specified in this model. In order for the directionality of variables to be established, however, researchers must collect data over multiple time periods while controlling for extraneous variables (e.g., BMI, pregnancy, and relationship status) and initial levels of the model constructs.

Our constructs may have been confounded somewhat with recall and measurement error. Participants' perceptions of their caregivers' eating messages are influenced by retrospective recall (Reis & Gable, 2000). Thus, we cannot ascertain the accuracy of participants' reports of the quantity and quality of their caregivers' eating messages. Although young adults are often removed somewhat from their childhood experiences, their perceptions shape their well-being, attitudes, and behaviors more so than what actually happened (Kelly, 1955). Further, attachment style, while interpersonal in the sense that it likely emerges from the parent-child bond, is also intrapersonal in that participants maintain their relationship style (Lopez & Gormley, 2002). We also assessed participants' self-reported height and weight, which adds social desirability and memory recall error to the estimation of participants' BMI.

Another limitation was the homogeneity of our sample. Participants were mainly White, young adult, middle-class, first-year college women, and our findings may not generalize well to other individuals. Future research should investigate this model in more diverse women as well as men.

Conclusion

Our final model investigating interpersonal and intrapersonal links to body appreciation, as well as body appreciation's connection to intuitive eating, provided a good fit with college women. Body appreciation played a central mediational role, as it accounted for links from interpersonal (i.e., restrictive/critical caregiver eating messages, attachment anxiety) and intrapersonal (i.e., discrepancy perfectionism) variables to intuitive eating, suggesting that it is an important variable to target for clinical intervention. Yet, body appreciation did not predict unique variance in depressive symptoms. This finding, when juxtaposed with extant research on the strong connection between negative body image and depressive symptoms, adds evidence that body appreciation is not the mirror opposite of negative body image. Given that research on positive body image is beginning to take hold, exploring models such as the one presented in this study with diverse samples may offer valuable information on the interpersonal and intrapersonal links to body appreciation among all individuals.

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This article represents a version of Amy Iannantuono's senior honors thesis, directed by Tracy Tylka. Amy Iannantuono is now a licensed Professional Counselor in the state of Ohio and is employed at Firelands Counseling and Recovery Services of Seneca County.

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