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The Perfect Body: A Potential Pathway of Anorexic Symptom Development in Women
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Morehead State University

ABSTRACT. Several variables have been related to anorexic symptoms, including socially prescribed perfectionism (SPP), thin ideal internalization (TII), and body dissatisfaction (BD). We sought to extend a previous model of bulimic symptom development to anorexic symptom development. An online survey collected data from 114 predominantly European American undergraduate women attending a Southeastern university. First, we determined whether SPP predicted anorexic symptoms and whether this relationship was mediated by BD. The analyses revealed that SPP predicted anorexic symptoms, \( b = .04, t(114) = 2.41, p = .018 \). BD was found to mediate this relationship, indirect effect = .02, 95% bias-corrected CI [.01, .05]. We then focused on a similar pathway where TII was the independent variable. We concluded that TII did predict anorexic symptoms, \( b = .17, t(114) = 4.85, p < .001 \). However, BD only partially mediated this relationship, indirect effect = .10, 95% bias-corrected CI [.06, .15]. Last, we combined the two models into a larger model using structural equation modeling; SPP and TII were hypothesized as occurring first in the model and being independent of one another. The results supported the final model, \( \chi^2(1, N = 114) = 1.14, p = .285, GFI = .995, SRMR = .021, NFI = .991, CFI = .999, RMSEA = .035 \). We concluded that the development of anorexic symptoms may follow a similar path to that of bulimic symptoms. The findings provide important implications for possible prevention strategies.

Anorexia nervosa is a mental disorder marked with severe symptomology, high relapse rates, poor physical health consequences, and high mortality rates (Arcelus, Mitchell, Wales, & Nielsen, 2011; Carter, Blackmore, Sutandar-Pinnock, & Woodside, 2004; Mitchell & Crow, 2006). Clinicians in the United States report a marked increase in eating disorders, particularly among women, in recent decades. Although there has been a debate about whether the incidence of eating disorders is increasing in the United States (Fombonne, 1995; Hoek, 1993; Steinhausen, 2002a; 2002b), the higher prevalence of disorders such as anorexia nervosa, in Western countries relative to non-Western countries (Makino, Tsuboi, & Dennerstein, 2004), suggests that psychosocial factors may contribute. Although there seems to be an increased empirical focus on the genetic components of eating disorders (DeAngelis, 2002; Keel & Klump, 2003), the bulk of the research has focused on psychosocial factors believed to underlie the observed differences in aspects of these disorders between countries (e.g., Shea & Pritchard, 2007; Stice, Gau, Rohde, & Shaw, 2017; White et al., 2016). Given that anorexia nervosa is highly treatment-resistant and that its antecedents seem to be primarily environmental, more research is needed to discover and understand these psychosocial factors so that future cases of the disorder can be prevented before they fully develop. Psychosocial variables associated with the disorder include perfectionism, body dissatisfaction (BD), and thin ideal internalization (TII).
Perfectionism

Although perfectionism may initially seem to be an adaptive personality characteristic, previous research has found it to be both adaptive and maladaptive depending on its severity and context (e.g., Egan, Pick, Dyck, & Kane, 2011; Enns, Cox, Sareen, & Freeman, 2001; Fedewa, Burns, & Gomez, 2005). For example, moderate levels of perfectionism may allow an individual to produce a high-quality product, and elevated levels of perfectionism may cause an individual to spend excessive time on unnecessary components of a product or to fixate obsessively on unrealistic, unachievable standards, which may result in anxiety or despair. Thus, high perfectionism is linked to several mental disorders and dysfunctional behaviors such as depression, social anxiety disorder, trait anxiety, obsessive-compulsive disorder and obsessive-compulsive personality disorder, and eating disorders (Anderluh, Tchanturia, Rabe-Hesketh, & Treasure, 2003; Hewitt et al., 2002; Juster et al., 1996; Sassaroli et al., 2008).

There are multiple theories on why perfectionism may be involved in eating disorders; the primary theory presented in this work was proposed by Tissot and Crowther (2008), which was applied to individuals with bulimic symptoms. In their model, perfectionism predicted bulimic symptoms but only when mediated by other variables such as TII and BD. The model suggests that some women may have perfectionistic tendencies that cause them to become obsessed with particular domains of interest. For example, after seeing a particular image of the perfect body that society portrays, a new domain of interest may be created—obtaining the perfect body; the perfect body for women portrayed by Western societies tends to be excessively slender and/or athletic. After comparing her body to the thin ideal, a woman with high perfectionism may become dissatisfied with her body and subsequently modify her eating patterns to a maladaptive extent (e.g., bingeing, purging) in an attempt to achieve an unrealistic or unobtainable body type. We hypothesized that this pathway might also result in anorexic symptoms such as fasting, extreme exercising, and extreme weight loss.

Many researchers posit that perfectionism is a multidimensional construct (e.g., Frost, Marten, Lahart, & Rosenblate, 1990; Hewitt & Flett, 1991). According to Hewitt and Flett’s (1991) theory, perfectionism consists of three dimensions: self-oriented perfectionism (SOP), other-oriented perfectionism, and socially prescribed perfectionism (SPP). Intuitively, the layperson may think of perfectionism as a self-oriented, intrapersonal personality style. Essentially, SOP is this component of perfectionism. SOP entails a motivating tendency to set and perform to high standards. Other-oriented perfectionism is an interpersonal factor that is similar in nature to SOP. Where the two dimensions differ is based upon the direction of high standards. Whereas SOP involves directing high standards toward the self, other-oriented perfectionism directs these standards toward other individuals. In other words, perfectionistic individuals with elevated levels of other-oriented perfectionism will expect high performance from those around them. SPP is the other interpersonal component of perfectionism. Whereas other-oriented perfectionism involves individuals directing unrealistic standards toward others, SPP involves individuals perceiving that others are imposing unrealistic standards onto them. These standards prescribed by others cause individuals to experience feelings of anxiety because they fear that they cannot perform to these standards (Hewitt & Flett, 1991). SOP and SPP are the dimensions that seem to be most related to eating pathology (e.g., Bardone-Cone et al., 2007; Cockell et al., 2002; Tissot & Crowther, 2008). For example, Cockell and colleagues (2002) found that patients with anorexia nervosa tend to have higher levels of SOP and SPP than the normative population.

Thin Ideal Internalization

Thin Ideal Internalization (TII) is another factor that may play into the development of eating disorders, particularly anorexia nervosa and bulimia nervosa. TII refers to “the extent to which an individual cognitively ‘buys into’ socially defined ideals of attractiveness and engages in behaviors designed to produce an approximation of these ideals” (Thompson, Heinberg, Altabe, & Tantleff-Dunn, 1999; Thompson & Stice, 2001, p. 181). TII has been linked to dieting, negative affect, negative evaluations of one’s body, and eating pathology (Stice, 2001; Stice, Mazotti, Krebs, & Martin, 1998; Thompson & Stice, 2001). TII, as with other eating disorder-related constructs, is primarily an issue in young, Western women because there is a tendency to value thin physiques and use them as the ideal standard of beauty and attractiveness. Investigating the nature of the connection between TII and eating pathology could determine avenues of prevention, treatment, and relapse prevention. In relation to perfectionism, previous research has
suggested that TII may mediate the relationships between both SPP and SOP and bulimic symptoms and predict BD (Tissot & Crowther, 2008).

**Body Dissatisfaction**

BD is a construct that is beginning to receive a great deal of recognition because it seems to be a key underlying feature of some eating disorders (e.g., Graziano & Sikorski, 2014; Stice et al., 2017; Stice & Shaw, 2002). Essentially, BD is a persistent pattern of negative appraisals of one’s own physical body; it also involves the avoidance of situations that induce such appraisals (Thompson & van der Berg, 2002). For women, this generally involves concerns over body size, hips, figure, and the stomach (Stice & Shaw, 2002) given that these aspects tend to be emphasized by media and society in Western countries. BD has been shown to be highly related to eating pathology and is thought to be a predictor rather than a consequence of eating pathology (Boone & Soenens, 2015; Stice & Shaw, 2002; Tissot & Crowther, 2008).

**The Present Study**

In both Tissot and Crowther’s (2008) model and Stice’s (1994, 2001) dual-pathway model of bulimic pathology, BD is thought to occur because women who have internalized the thin ideal fail to reach it and consequently become dissatisfied with their bodies. Although the findings presented by Tissot and Crowther (2008) apply mainly to women with bulimic symptoms, we believe that they could be generalized to women with anorexic symptoms for several reasons. First, TII and BD are not necessarily specific to bulimia nervosa. TII can relate to any eating disorder that involves perceived pressures to be thin, and BD can relate to any eating disorder that involves feelings of discontent toward specific body parts or the entire body; this seems to be the case in anorexia nervosa. Second, although bulimia nervosa and anorexic nervosa are distinguishable from one another, the two disorders are similar to one another. For example, the two disorders clinically present in similar ways (e.g., in both disorders, patients may overevaluate their body shape and weight, acutely or chronically restrict their intake of calories, fear gaining weight; American Psychiatric Association, 2013) and share similar correlates (e.g., perfectionism, TII, and BD). The fact that these two disorders are similar calls into question whether they have similar etiologies. The goal of the current work was to investigate whether Tissot and Crowther’s (2008) model could be generalized to individuals in a nonclinical population with anorexic symptoms.

Although Tissot and Crowther (2008) suggested that internalization of the thin ideal may occur after perfectionistic tendencies are formed, we suggested that internalization of the thin ideal could occur so early in one’s lifespan that directionality between certain personality characteristics (i.e., perfectionism) and TII is difficult, if not impossible, to determine. Therefore, we did not propose any directionality between the two variables. Rather, we saw them as independent, although related, factors that directly affect BD and indirectly affect anorexic symptoms.

In the current work, we propose a model that can be separated into two smaller models. The first involves perfectionism predicting anorexic symptoms with this relationship being mediated by BD. The second involves TII predicting anorexic symptoms with this relationship also being mediated by BD. The larger model combines these two models with perfectionism and TII acting independently of each other. Because of the complexity of this model, we decided to take an inductive approach to testing it. We tested each component of the model over a series of three steps.

It was hypothesized that perfectionism scores would significantly predict anorexic symptomatology scores. It was also hypothesized that BD scores would mediate this relationship, such that perfectionism scores would no longer predict anorexic symptoms. These two hypotheses were tested in the first step. We hypothesized that TII scores would significantly predict anorexic symptomology scores. We also hypothesized that BD scores would mediate this relationship, such that TII scores would no longer predict anorexic symptoms. These hypotheses were tested in the second step of the study. In the third step, we assessed how well the data fit the overall larger model by combining the two smaller models and using structural equation modeling software.

**Method**

**Participants**

An online survey was conducted with 151 undergraduate women at a rural, Southeastern university. Participants with missing data were excluded listwise from analyses. Any participant who did not give a response to one item for any of the instruments was excluded from the analyses. Thus, only participants with responses to each item of each instrument were included in the analyses. Thirty-seven of
the 151 participants were missing at least one response. Therefore, the final sample consisted of 114 participants. Of the final sample, 108 (94.7%) were European American, five (4.4%) were African American, and one (0.9%) was Hispanic or Latino. The average age of the women was 18.8 years (SD = 1.3; range: 18–27), and the average BMI was 24.9 (SD = 5.6; range: 14.9–44.6).

Procedures
Participants were recruited from psychology courses through SONA, an online recruitment tool that allows students to participate in studies and receive class credit while maintaining anonymity. After signing up for the study on SONA, participants were linked to a survey on SurveyMonkey.com and were given unlimited time to respond to each item. The survey contained an informed consent and debriefing form. Demographic information was obtained by employing certain items from SurveyMonkey Inc.’s question bank, which were related to age, ethnicity, gender, weight, and height. This study was approved by the university’s institutional review board.

Measures
Perfectionism. The Multidimensional Perfectionism Scale (MPS; Hewitt & Flett, 1991, 2004) is a widely used measure of perfectionism with 45 items scored on a 7-point Likert-type scale with higher scores indicating more perfectionistic tendencies. It aligns with Hewitt and Flett’s (1991) theory that perfectionism is a multidimensional personality style that consists of intrapersonal and interpersonal dimensions. The MPS consists of three subscales, Self-Oriented Perfectionism (SOP), Other-Oriented Perfectionism, and Socially Prescribed Perfectionism (SPP). The measure’s test-retest reliability ranged from .75 to .88 in a small sample of students, and the subscales have been shown to have acceptable to good internal consistency (α = .74 to .88; Hewitt & Flett, 1991). A principal component analysis with a sample of 1,106 students provided evidence of the MPS’s construct validity in that it supported the three-dimension structure upon which the test was constructed (Hewitt & Flett, 1991). In the current study, the overall MPS had good internal consistency (α = .86), the SOP subscale had good internal consistency (α = .88), the SPP subscale had acceptable internal consistency (α = .74), and the other-oriented perfectionism subscale had questionable internal consistency (α = .65).

The MPS seems to have strong convergent validity because its subscales generally have medium to high correlations with other perfectionism measures (see Flett & Hewitt, 2015, pp. 602–603, for a review). We excluded the dimension of other-oriented perfectionism from our analysis for several reasons. First, previous studies have failed to find relationships between other-oriented perfectionism and eating pathology or between other-oriented perfectionism and body image (e.g., Chang, Iveyaz, Downey, Kashima, & Morady, 2008; García-Villamisar, Dattilo, & Del Pozo, 2012; McLaren, Gauvin, & White, 2001). Second, the internal consistency of the Other-Oriented Perfectionism subscale was low in our study, raising concerns about excessive measurement error. To be parsimonious in our analyses, we combined SOP and SPP into a single composite score; this derivation of a single perfectionism score was a method used by Tissot and Crowther (2008), as well.

Anorexic symptoms. The Eating Attitudes Test-26 (EAT-26; Garner, Olmsted, Bohr, & Garfinkel, 1982) was used as a measure for anorexic symptoms. The EAT-26 was developed to be used as a screener for anorexia nervosa in clinical populations. However, it has occasionally been used in nonclinical samples as a continuous scale (Elgin & Pritchard, 2006; Koslowsky et al., 1992; Mazzeo, 1999; Mintz & O’Halloran, 2000). The original version of the EAT was 40 items; after an exploratory factor analysis, it was shortened to 26 items, and this 26-item version correlated highly (r = .98) with the 40-item version. The EAT-26 demonstrated good internal consistency (α = .83) in a sample of 140 undergraduate women (Garner et al., 1982) and high test-retest reliability (r = .84) over a 2-week period (Carter & Moss, 1984). The EAT-26 tends to have high correlations with body image and BD variables (e.g., Cooper, Taylor, Cooper, & Fairburn, 1987; Garner et al., 1982). Because the scoring of the original EAT-26 is not based on a traditional Likert scale (the three lower ratings are all scored as 0s and the three higher ratings are scored from 1 to 3), the scoring was modified so that anorexic symptoms in our nonclinical population could be measured continuously on a scale from 0 to 5 with higher scores indicating more anorexic symptoms. After this scoring modification, the internal consistency of the EAT-26 in the current study was excellent (α = .94).

Body dissatisfaction. Like the original study by Tissot and Crowther (2008), we used two different BD measures, the Body Shape Questionnaire-34...
The Perfect Body

The BSQ-34 has been shown to have high test-retest reliability ($\alpha = .88$) over a period of 3 weeks with 33 undergraduate women. This measure was also shown to have good convergent validity with multiple subscales of the Multidimensional Body-Self Relations Questionnaire, which consists of Appearance Evaluation, Appearance Orientation, and Body Areas Satisfaction, in both clinical and nonclinical samples (Brown, Cash, & Mikulka, 1990; Rosen, Jones, Ramirez, & Waxman, 1996). Rosen and colleagues (1991) demonstrated good internal consistency for the BIAQ ($\alpha = .89$) in a sample of 353 undergraduate women. In the same study, the BIAQ had high test-retest reliability ($r = .87$) over a 2-week period with 25 participants of the aforementioned sample. Convergent validity was also high ($r = .78$) with the BSQ-34 (Rosen et al., 1991). In the current study, the BSQ-34 demonstrated excellent internal consistency ($\alpha = .98$), and the BIAQ demonstrated good internal consistency ($\alpha = .85$).

**Thin ideal internalization.** The Sociocultural Attitudes Towards Appearance Questionnaire – 4 (SATAQ-4; Schaefer et al., 2015) measures internalization of thin and athletic ideals, as well as media, peer, and family pressure to conform to a certain ideal; each of these variables comprise a total of five subscales. For the purpose of this study, we used the 5-item Internalization: Thin/Low Body Weight subscale, which demonstrated good internal consistency ($\alpha = .88$) with the current sample. We chose this scale because the other internalization subscale, Internalization: Muscular/Athletic, is more focused on men and is less consistent with the thin ideal. The SATAQ-4 was originally validated on a sample of undergraduate women at a Southeastern university in the United States and was cross-validated with similar samples throughout the country. In previous studies, the Internalization: Thin/Low Body Weight subscale has shown good internal consistency ($\alpha = .87$) and good convergent validity with the Eating Disorders Examination – Questionnaire (ranging from $r = .53$ to $.63$), a measure of eating pathology (Fairburn & Beglin, 2008), and convergent validity with the Multidimensional Body-Self Relations Questionnaire – Appearance Evaluation Subscale (ranging from $r = -.46$ to -.36), a measure of body satisfaction (Brown et al., 1990; Schaefer et al., 2015).

**Data Analyses**

To measure multiple aspects of perfectionism, we combined SOP and SPP scores by summing the total scores of the two subscales. Because the two subscales consisted of the same number of items and were scored the same, we did not transform the scores when combining them. On the other hand, the BSQ-34 and BIAQ had different scale ratings and number of items, so both scales were transformed into z scores before being combined.$^1$ Tissot and Crowther (2008) used this method of summing the standardized scores of each BD measure, and this method was also utilized by Bardone-Cone, Weishuhn, and Boyd (2009) to achieve adaptive and maladaptive perfectionism scores.

SPSS version 24.0 was used to gather descriptive statistics and observe correlations between variables. PROCESS, an SPSS macro developed by Andrew F. Hayes (2016) was used to test the mediated models. PROCESS is capable of running mediated and moderated models through several series of multiple regressions, allowing for easier and more efficient testing of mediated and moderated models. Baron and Kenny’s (1986) guidelines for determining mediation were followed in addition to this SPSS macro.

The first step of this study involved testing the model in which BD mediated the relationship between perfectionism and anorexic symptoms. The second step involved testing the model in which BD moderated the relationship between perfectionism and anorexic symptoms.

[1] BIAQ scores were non-normally distributed and were therefore transformed logarithmically to eliminate positive skew before being transformed into $z$ scores and then combined.
which BD mediated the relationship between TII and anorexic symptoms. In the third step, each revised model of the previous two steps were combined into a final model. This final model was tested using a path analysis procedure in Amos version 24, a plug-in for SPSS that performs structural equation modeling (Arbuckle, 2016). Using structural equation modeling, researchers can determine how well the observed data fit theoretical models. For our work, we used three absolute fit indices (Chi-Squared test; goodness-of-fit, GFI; and standardized root mean square residual, SRMR), two relative fit indices (normed-fit index, NFI; and comparative fit index, CFI), and one adjusted for parsimony index (root mean square error of approximation, RMSEA).

**Results**

**Preliminary Descriptive Statistics**

Normality and kurtosis of all variables was assessed before performing regression analyses. As seen in Table 1, SOP alone, SPP alone, SOP and SPP combined, and BSQ-34 scores were normally distributed. However, BIAQ and EAT-26 scores were positively skewed, so these measures were transformed. The BIAQ scores underwent a log transformation, and the EAT-26 scores were transformed into their relative square roots.

To confirm whether our sample had clinically significant symptoms of anorexia, we identified possible cases of anorexia nervosa using two criteria. A BMI of 17.5 or less is one diagnostic guideline in the ICD-10 for identifying anorexia nervosa (World

**TABLE 1**

<table>
<thead>
<tr>
<th></th>
<th>Min.</th>
<th>Max.</th>
<th>M (SD)</th>
<th>Skewness</th>
<th>SE</th>
<th>Kurtosis</th>
<th>SE</th>
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<tr>
<td>SOP</td>
<td>31</td>
<td>105</td>
<td>71.62 (14.34)</td>
<td>.266</td>
<td>.226</td>
<td>-.344</td>
<td>.449</td>
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<tr>
<td>SPP</td>
<td>32</td>
<td>89</td>
<td>59.41 (10.61)</td>
<td>.028</td>
<td>.226</td>
<td>.573</td>
<td>.449</td>
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<tr>
<td>SOP &amp; SPP</td>
<td>66</td>
<td>188</td>
<td>130.85 (21.30)</td>
<td>.057</td>
<td>.226</td>
<td>.148</td>
<td>.449</td>
</tr>
<tr>
<td>BSQ-34</td>
<td>34</td>
<td>199</td>
<td>99.75 (44.86)</td>
<td>.333</td>
<td>.226</td>
<td>-.711</td>
<td>.449</td>
</tr>
<tr>
<td>BIAQ</td>
<td>13</td>
<td>81</td>
<td>34.51 (13.40)</td>
<td>.949†</td>
<td>.226</td>
<td>.692</td>
<td>.449</td>
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<tr>
<td>BIAQ (log)</td>
<td>1.11</td>
<td>1.91</td>
<td>1.51 (0.16)</td>
<td>.105</td>
<td>.226</td>
<td>-.451</td>
<td>.449</td>
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<tr>
<td>BSQ &amp; BIAQ</td>
<td>-3.90</td>
<td>4.13</td>
<td>-.06 (1.86)</td>
<td>.167</td>
<td>.226</td>
<td>-.749</td>
<td>.449</td>
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<tr>
<td>EAT-26</td>
<td>5</td>
<td>125</td>
<td>41.82 (24.40)</td>
<td>.701†</td>
<td>.226</td>
<td>.540</td>
<td>.449</td>
</tr>
<tr>
<td>EAT-26 (Square Root)</td>
<td>2.24</td>
<td>11.18</td>
<td>6.17 (1.96)</td>
<td>-.057</td>
<td>.226</td>
<td>-.443</td>
<td>.449</td>
</tr>
<tr>
<td>TII</td>
<td>5</td>
<td>25</td>
<td>17.37 (4.86)</td>
<td>.353</td>
<td>.226</td>
<td>-.213</td>
<td>.449</td>
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</table>

Note. SOP = self-oriented perfectionism; SPP = socially prescribed perfectionism; BSQ-34 = Body Shape Questionnaire-34; BIAQ = Body Image Avoidance Questionnaire; EAT-26 = Eating Attitudes Test-26; TII = thin ideal internalization. † Indicates skewness. BIAQ and EAT-26 scores were transformed in order to create normal distributions.

<table>
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<tr>
<td>1. SOP</td>
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<td>2. SPP</td>
<td>.45*</td>
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<td>3. SOP &amp; SPP</td>
<td>.90**</td>
<td>.80**</td>
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<td>4. BSQ-34</td>
<td>.09</td>
<td>.36**</td>
<td>.25**</td>
<td></td>
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<td>5. BIAQ (log)</td>
<td>-.09</td>
<td>.24*</td>
<td>.08</td>
<td>.67**</td>
<td></td>
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<td>6. BSQ &amp; BIAQ</td>
<td>.00</td>
<td>.33**</td>
<td>.18</td>
<td>.91**</td>
<td>.92**</td>
<td></td>
<td></td>
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<tr>
<td>7. EAT-26 (Square Root)</td>
<td>.14</td>
<td>.32**</td>
<td>.25</td>
<td>.63**</td>
<td>.66**</td>
<td>.71**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. TII</td>
<td>.34**</td>
<td>.27*</td>
<td>.37**</td>
<td>.53**</td>
<td>.32**</td>
<td>.47**</td>
<td>.47**</td>
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</table>

Note. SOP = self-oriented perfectionism; SPP = socially prescribed perfectionism; BSQ-34 = Body Shape Questionnaire-34; BIAQ = Body Image Avoidance Questionnaire; EAT-26 = Eating Attitudes Test-26; TII = thin ideal internalization. * p < .05. ** p < .01. *** p < .001.
Health Organization, 1992). Using this guideline, we identified 2 (1.8%) possible cases of anorexia nervosa. In addition, 36 (31.6%) participants scored above the clinical cut-off score on the EAT-26 on its original scoring scheme. Only 1 (0.9%) participant had a BMI of 17.5 or less and scored above the EAT-26 cut-off score. All participants meeting one or both of these criteria were included in the analyses in order to capture the wider range of anorexic symptoms in the population.

Preliminary Correlations
As seen in Table 2, nearly all the variables were significantly correlated in the expected directions except for some relationships involving SOP; the correlation between SOP and BD was nonsignificant, \( r = 0 \). Additionally, the correlation between SOP and anorexic symptoms was only marginally significant (\( p = .081 \)) and was weak, \( r = .14 \). Because of the lack of relationships between SOP and the other important variables, we excluded it from further analyses and investigated SPP alone as the independent variable of the proposed model.

Step 1: Mediation Analysis
Figure 1 displays the resulting model of this mediation analysis. TII was entered as a covariate in PROCESS in order to control for its effect on SPP and the other variables. Baron and Kenny’s (1986) guidelines for mediation requires four criteria to be satisfied before determining mediation. Criterion 1 requires that the independent variable predicts the dependent variable; SPP did significantly predict anorexic symptoms after controlling for TII, \( b = .04, SE = .02, t(114) = 2.41, p = .018 \). Criterion 2 requires that the independent variable predicts the mediating variable; SPP did significantly predict BD after controlling for TII, \( b = .04, SE = .01, t(114) = 2.54, p = .013 \). Criterion 3 requires that the mediating variable predicts the dependent variable after controlling for the independent variable; BD did predict anorexic symptoms after controlling for TII and SPP, \( b = .64, SE = .08, t(114) = 7.96, p < .001 \). Criterion 4 requires that there must be no significant prediction of the independent variable on the dependent variable after controlling for the mediator; after controlling for TII and BD, SPP no longer significantly predicted anorexic symptoms, \( b = .01, SE = .01, t(114) = 1.06, p = .293 \). Approximately 52.8% of the variance in anorexic symptoms was explained by TII, SPP, and BD, \( R^2 = .52 \). The standardized indirect effect was \( \beta = .14 \). We also tested the significance of this indirect effect using bootstrapping procedures. The unstandardized indirect effect was \( .02 \), and the 95% bias-corrected
confidence interval ranged from .008 to .050. Therefore, the indirect effect was statistically significant, and the effect of SPP on anorexic symptoms was fully mediated by BD.

Step 2: Mediation Analysis
Using PROCESS and following Baron and Kenny’s (1986) guidelines again, Criterion 1 was satisfied; TII significantly predicted anorexic symptoms after controlling for SPP, \( b = .17, \ SE = .03, t(114) = 4.85, p < .001 \). Criterion 2 was satisfied, as TII did significantly predict BD after controlling for SPP, \( b = .16, \ SE = .03, t(114) = 4.83, p < .001 \). Criterion 3 was satisfied as well; BD did predict anorexic symptoms after controlling for SPP and TII, \( b = .64, \ SE = .08, t(114) = 7.96, p < .001 \). However, as seen in Figure 2, Criterion 4 was not satisfied because TII still significantly predicted anorexic symptoms after controlling for BD and SPP, although the \( p \) value did decrease, \( b = .07, \ SE = .03, t(114) = 2.20, p = .03 \). Again, approximately 52.8% of the variance in anorexic symptoms was explained by TII, SPP, and BD, \( R^2 = .53 \). The standardized indirect effect was \( \beta = .25 \). We also tested the significance of this indirect effect using bootstrapping procedures. The unstandardized indirect effect was computed for each of 1,000 bootstrapped samples; this unstandardized indirect effect was .10, and the 95% bias-corrected confidence interval ranged from .064 to .149. Therefore, the indirect effect was statistically significant, and the effect of TII on anorexic symptoms was partially mediated by BD.

Step 3: Path Analysis of the New Model
In Amos, both SPP and TII were entered as independent variables and covariates of each other; anorexic symptoms was entered as the dependent variable; and BD was entered as a mediator of SPP and anorexic symptoms and a partial mediator of TII and anorexic symptoms. As seen in Figure 3, the overall fit for the model was good, \( \chi^2(1, N = 114) = 1.14, p = .285, GFI = .995, SRMR = .021, NFI = .991, CFI = .999, RMSEA = .035 \). These results support the view that BD fully mediates the relationship between SPP and anorexic symptoms and partially mediates the relationship between TII and anorexic symptoms.

Discussion
The proposed hypotheses were partially supported by the results. Although socially prescribed perfectionism (SPP) did predict anorexic symptoms and this relationship was fully mediated by body dissatisfaction (BD), self-oriented perfectionism (SOP) did not reliably predict BD nor anorexic symptoms and was therefore removed from the mediation analysis. Although many studies have found both SOP and SPP to be related to eating pathology, we could only find a relation between SPP and anorexic symptoms in our sample. There could be multiple reasons for this. First, anorexic symptoms in nonclinical populations like ours could be primarily driven by interpersonal factors, whereas bulimic symptoms may be driven by both intrapersonal and interpersonal factors, as seen in Tissot and Crowther’s (2008) work. Although this might be unique to our sample, we contend that this finding reiterates the importance of social forces in the formation of eating pathology. Successful replication of these findings may have strong implications for future intervention and prevention programs. For example, clinicians can develop prevention programs that emphasize the importance of social factors and the severe outcomes that can result from a society that cultivates appearance overvaluation, weight teasing, and weight stigma. If these programs can be implemented in middle schools and high schools, the social factors contributing to the development of eating pathology can be mitigated.

Second, the rural, Southeastern sample of predominantly European American women used in this study may hold unique characteristics that limit the generalizability of these findings to the rest of the United States. SPP tends to relate to high parental expectations and parental criticism (Flett & Hewitt, 2015). Further, anorexic patients tend to come from families where the mothers are perfectionistic, and adolescent girls with fathers who tease them about their weight and appearance tend to have elevated levels of eating restriction, bulimic symptoms, BD, and TII (Fairburn, Cooper, Doll, & Welch, 1999; Keery, Boutelle, van den Berg, & Thompson, 2005). Given that family connectedness is an emphasized value in the Appalachian region (Tang & Russ, 2007), it is possible that young adult women in the region may interact with their families more and experience more family pressures to appear attractive. Thus, intrapersonal, perfectionistic cognitions are overridden by interpersonal cognitions about the high expectations and standards set by family members. In other words, SPP’s connection to anorexic symptoms may be so strong in this sample that the influence of SOP may be diminished.

Third, the null results of SOP in this study may be due in part to the use of a clinical measure of...
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The use of a more sensitive, nonclinical measure might have expanded the range of observed scores and corrected the positive skew observed in this study. If our measure was more sensitive, perhaps we would observe a relationship between SOP and anorexic symptoms.

As hypothesized, BD did predict anorexic symptoms. This is not surprising because previous studies have established the relationship between BD and eating pathology (e.g., Kong et al., 2013; Stice, 2002; Stice & Shaw, 2002; Tissot & Crowther, 2008). We were able to replicate these findings in a unique, understudied Appalachian population, which suggests the robustness of the relationship.

The second model was only partially supported. Although the original model proposed that BD mediated TII’s prediction effect on anorexic symptoms, these findings suggest that BD only partially mediates this relationship. This suggests that TII both directly and indirectly affects anorexic symptoms. There is a reason why BD may only partially mediate the relationship. It is possible that TII’s effect on anorexic symptoms is strong enough that no variable can fully mediate this relationship. Such a strong effect by TII may indicate that anorexic symptoms are heavily influenced by cognitions rather than behaviors. Given the potentially large influence of cognitive variables such as TII on anorexic symptoms, it may behoove clinicians to develop screening programs or prevention programs that assess and address maladaptive cognitions and TII before BD and behavioral symptoms form.

In this study, we expanded on Tissot and Crowther’s (2008) model that was developed for bulimic symptoms and applied it to assess anorexic symptoms. Although the findings of the current work did not completely replicate Tissot and Crowther’s (2008) model, our finalized model exhibited many similarities to their model. This suggests the possibility of a common etiological pathway for the two disorders that merits further investigation.

Despite observing a possible pathway to anorexic symptoms in this study, one major caveat to our findings is that our sample was almost entirely composed of European American women. Because the sample in this study was not ethnically diverse, it is difficult to generalize the findings to women of color. Had our sample included more African American women, it is possible that the strengths of the relationships involving TII would be weakened. African American women tend to desire a thicker or curvier body ideal than European American women (Overstreet, Quinn, & Agocha, 2010; Tylka, 2012), and African American women are at a lower risk for anorexia nervosa than European American women (Taylor, Caldwell, Baser, Faison, & Jackson, 2007). Also, African American women who identify with African American culture, as opposed to those who identify with European American culture, desire a curvier body ideal (Tylka, 2012). Therefore, TII may not play a role in the development of eating disorder symptoms for such women, and the pathway to anorexic symptoms may greatly differ for these women. Supporting this possibility, a meta-analysis found that African American women showed slightly lower levels of BD than European American women (Grabe & Hyde, 2006).

Similarly, Hispanic women experience pressure by their culture to obtain a curvy body (Viladrich, Yeh, Bruning, & Weiss, 2009). However, there are less marked differences between Hispanic women and European American women. For example, Hispanic women are also pressured to achieve a thin body by mainstream American media (Viladrich et al., 2009). This could explain why they prefer thinner body ideals that are comparable to those of European American women (Gordon, Castro, Sitnikov, & Holm-Denoma, 2010) as well as similar levels of BD (Schooler & Lowry, 2011). Because of these conflicting pressures to conform to two different body types, it is possible that the model presented in this study could vary for Hispanic women.

Less is known about eating disturbances and BD in Asian American women because there are mixed findings about the differences between Asian American women and European American women (George & Franko, 2010). However, there seem to be more similarities than differences. In a meta-analysis, Asian American women expressed similar levels of BD as European American women (Grabe & Hyde, 2006). A study by Evans and McConnell (2003) suggested that Asian American women may buy into the Western thin ideal at similar rates as European American women, as indicated by their ratings of European American blonde models. Nouri, Hill, and Orrell-Valente (2011) revealed a pathway to TII and BD that was found in both Asian American and European American women. Because of this, Nouri and colleagues (2011) suggested that many of the findings on eating pathology and body image in European American women could be applied to Asian American college women.
Nevertheless, we cannot generalize the findings presented in the current study to Asian American women because our sample did not include any women of this ethnicity.

Limitations
There are some limitations worth noting in this study. First, the data in this study were gathered via an online survey, which is vulnerable to extraneous variables and environmental factors that cannot be controlled. Second, a convenience sampling method was utilized to obtain the data. Third, a clinical measure was used with our nonclinical population to capture anorexic symptoms instead of a nonclinical measure. Some scales were modified, combined, or transformed in order to fit these clinical measures to our sample, which might have influenced this study’s results. Fourth, although the sample size (N = 114) was fairly large, a larger sample is more desirable because such a sample size would decrease sampling error. Fifth, it is impossible to determine directionality of all the variables, given the use of a cross-sectional design. Although this study can give implications about the directionality of the variables, a longitudinal and/or experimental design would be able to determine the directionality of the variables more accurately.

Another limitation involves the use of the SATAQ-4, particularly just one of its five subscales. Although the psychometric properties of the SATAQ-4 are relatively sound, only one subscale was used. If the three subscales measuring social pressures to be thin had been included, perhaps we could have made better conclusions about the social aspects related to the development of anorexic symptoms. Additionally, the subscale that was utilized in this study and the previous one only contained five items. It is possible that TII as a construct may be successfully captured in five items, but it is also possible that TII is more complex than this. Therefore, using only five items might have hindered us from capturing a more comprehensive picture of a participant’s level of TII. We used this single subscale because this method was utilized by Tissot and Crowther (2008). We recommend that future studies utilize measures of TII that contain more items such as the 10-item Ideal-Body Stereotype Scale-Revised (Stice, Ziemba, Margolis, & Flick, 1996).

Future Directions
Because of this study, we were able to discern the possible antecedents of symptoms of anorexia in women. We recommend that future researchers not only replicate this study but also measure social and cultural pressures, which are included in the SATAQ-4. In addition, we recommend that this model be tested on clinical samples of individuals with anorexia as well as clinical and nonclinical samples comprised of more racially and ethnically diverse individuals. The latter is especially important because our sample almost entirely consisted of European Americans. After this research has been conducted, a longitudinal study should be conducted to better determine directionality of all the variables observed in the current work. Although our primary aim of this study was to extend a model of bulimic symptomatology to anorexic symptomatology, more research should be conducted on both of these mental disorders within the same sample so that a direct comparison can be made between their developmental paths.

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