Personality traits and appearance-ideal internalization: Differential associations with body dissatisfaction and compulsive exercise

Shelby J. Martin, Sarah E. Racine

**A R T I C L E   I N F O**

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**A B S T R A C T**

Thin-ideal internalization is a robust risk factor for body dissatisfaction and eating pathology. Conversely, athletic-ideal internalization is often unrelated to body dissatisfaction, but predicts compulsive exercise (i.e., rigid, rule-driven exercise that is continued despite adverse consequences). Distinct personality traits could relate to internalization of different appearance ideals, which may be associated with divergent eating disorder outcomes. Past research has shown that neuroticism is related to body dissatisfaction, whereas extraversion and conscientiousness have been associated with regular and problematic exercise. The current study examined associations among personality traits (i.e., neuroticism, extraversion, conscientiousness), appearance-ideal internalization (i.e., thin- and athletic-ideal), and eating disorder cognitions/behaviors (i.e., body dissatisfaction, compulsive exercise) among 531 college men and women. Moreover, we tested whether appearance-ideal internalization mediated the relationships between personality traits with body dissatisfaction and compulsive exercise. As expected, body dissatisfaction was positively related to neuroticism, and compulsive exercise was positively associated with extraversion. Thin-ideal internalization positively correlated with neuroticism, athletic-ideal internalization positively correlated with conscientiousness, and both thin- and athletic-ideal internalization were positively related to extraversion. After controlling for gender, body mass index, the other appearance-ideal internalization, and the remaining personality traits, the indirect effects of both neuroticism and extraversion on body dissatisfaction through thin-ideal internalization were significant. Extraversion and conscientiousness were indirectly related to compulsive exercise through athletic-ideal internalization, whereas the indirect effect of neuroticism was dependent on covariates. As such, personality traits may be related to distinct eating disorder cognitions/behaviors through internalization of specific appearance ideals.

**1. Introduction**

Thin-ideal internalization, or the extent to which one sets culturally defined ideals of thinness as his/her own personal standard of attractiveness, is a robust risk factor for body dissatisfaction and eating disorders (EDs) (Stice, 2002). Thin-ideal internalization has been found to predict increases in body dissatisfaction (Rodgers, McLean, & Paxton, 2015) as well as the onset of bulimia nervosa in three of four longitudinal studies (Stice, Rohde, Butryn, Shaw, & Marti, 2015). Further, interventions that target thin-ideal internalization (i.e., Body Project) decrease body dissatisfaction and disordered eating (Stice, Marti, Spoor, Presnell, & Shaw, 2008). Thus, individuals who internalize the thin ideal appear to be vulnerable to the development of poor body image and EDs.

While a robust association between thin-ideal internalization and body dissatisfaction is well established, less is known about the impact of athletic-ideal internalization on ED cognitions/behaviors. Athletic-ideal internalization involves internalizing the importance of core physical attributes of athletes (i.e., muscularity, athletic build) (Schaefer, Burke, Thompson, et al., 2014). Available findings indicate that athletic-ideal internalization may not be associated with body dissatisfaction, but may instead relate to compulsive exercise (i.e., rigid, rule-driven exercise that is continued despite adverse consequences) (Bell, Donovan, & Ramme, 2016; Homan, 2010; Karr, Zunker, Thompson, et al., 2013; Ramme, Donovan, & Bell, 2016). In one longitudinal study of college females conducted over 7 months, thin-ideal internalization predicted changes in both body dissatisfaction and compulsive exercise, whereas athletic-ideal internalization only predicted changes in compulsive exercise (Homan, 2010). Further, Bell et al. (2016) found that body dissatisfaction did not explain the relation between athletic-ideal internalization and compulsive exercise in women; rather, athletic-ideal internalization directly related to...
compulsive exercise. Thus, internalizing different appearance ideals may relate to different ED cognitions/behaviors. Identifying mechanisms that account for these differential relationships could inform prevention and treatment options for component symptoms of EDs.

One important set of factors that may explain differential appearance-ideal/ED symptom associations is personality traits. Specifically, neuroticism (i.e., emotionally reactive/anxious vs. emotionally stable/calm), extraversion (i.e., outgoing/energetic vs. private/reserved), and conscientiousness (i.e., efficient/organized vs. easy going/careless) appear to be differentially linked to body dissatisfaction and constructs related to compulsive exercise (Allen & Walter, 2016; Lichtenstein, Christiansen, Elklit, Bilenberg, & Støving, 2014; Wilson & Dishman, 2015). A recent systematic review of personality and body dissatisfaction found that negative body image was associated with higher levels of neuroticism (97.0% of studies) and lower levels of extraversion (73.7% of studies) (Allen & Walter, 2016). Moreover, 75% of studies classified as low risk of bias found a negative relation between conscientiousness and body dissatisfaction, with no study finding a positive association (Allen & Walter, 2016) in stark contrast, a large meta-analysis of personality traits and physical activity found small, significant, positive associations with extraversion (r = 0.1076) and conscientiousness (r = 0.1037), and a small negative association with neuroticism (r = −0.0710) (Wilson & Dishman, 2015). Together, findings indicate that neuroticism is positively related to body dissatisfaction, while extraversion and conscientiousness are positively associated with exercise (Allen & Walter, 2016; Lichtenstein et al., 2014; Wilson & Dishman, 2015).

In terms of compulsive exercise, extraversion has emerged as a consistent positive predictor of problematic exercise (Andreasen et al., 2013; Costa & Oliva, 2012; Hausenblas & Giacobbi, 2004; Lichtenstein et al., 2014). However, research on neuroticism and conscientiousness with compulsive exercise is mixed. Both positive and negative associations between neuroticism and compulsive exercise constructs (e.g., “exercise addiction,” “exercise dependence”) have been found (Andreasen et al., 2013; Hausenblas & Giacobbi, 2004; Lichtenstein et al., 2014). On one hand, neuroticism may increase anxiety about weight/shape and health, which may be relieved through compulsive exercise (Hausenblas & Giacobbi, 2004). On the other hand, individuals high in neuroticism are typically easily defeated and may lack the grit, energy and motivation necessary for compulsive exercise (Potgieter & Venter, 1995). This is consistent with a study that found that individuals higher in neuroticism were more likely to drop out rather than adhere to a regular exercise program (Potgieter & Venter, 1995). Conscientiousness has been positively associated with “exercise addiction” and “excessive exercise,”; individuals higher in conscientiousness may strive to fulfill their need for self-efficacy and achievement through compulsive exercise (Andreasen et al., 2013; Levallius, Clinton, Bäckström, & Norring, 2015). However, among regular gym users, Costa & Oliva (2012) reported a negative association between conscientiousness and “exercise dependence,” while other studies report no significant association between these constructs (Hausenblas & Giacobbi, 2004; Lichtenstein et al., 2014).

Taken together, research on personality, body dissatisfaction, and compulsive exercise suggests that personality traits may differentially relate to distinct ED cognitions/behaviors. It is unknown whether these personality traits also uniquely relate to thin-ideal and athletic-ideal internalization. To our knowledge, only one study has examined associations between appearance-ideal internalization and personality traits; neuroticism was positively related, and conscientiousness was negatively related, to thin-ideal internalization in patients receiving inpatient treatment for EDs (Heinberg et al., 2008). Internalization of different appearance ideals could account for distinct personality-disordered eating associations, such that personality influences body dissatisfaction and compulsive exercise through thin- and athletic-ideal internalization. As such, we aimed to: 1) investigate associations among personality traits, appearance-ideal internalization, and eating disorder behaviors/cognitions, and 2) evaluate whether internalization of thin versus athletic ideals mediates relations between personality traits and ED cognitions/behaviors. Based on past literature, we hypothesized that neuroticism would positively relate to thin-ideal internalization and body dissatisfaction, while extraversion and conscientiousness would be negatively related. Thin-ideal internalization was expected to mediate the neuroticism-body dissatisfaction relationship. Extraversion was hypothesized to positively relate to athletic-ideal internalization and compulsive exercise, with athletic-ideal internalization mediating the extraversion-compulsive exercise association. Due to mixed findings for neuroticism and conscientiousness with compulsive exercise, no a priori hypotheses were formed for these associations.

2. Methods

2.1. Participants

Participants were 531 college students (i.e., 221 males and 310 females) enrolled in a psychology course at a Midwestern United States university. Participants ranged from 18 to 44 (M (SD) = 19.37 (2.20)) years. Most identified as White (90.6%), with 3.8% identifying as African American, 2.1% as Asian, 0.2% as Hawaiian or Pacific Islander, 0.6% as American Indian or Alaskan Native, and 2.8% as multi-racial. Body mass indexes (BMIs) ranged from 17.03 to 54.73 (M (SD) = 24.0 (4.35)). Participants provided informed consent and completed questionnaires via an online survey system for course credit. Three attention check questions were included (e.g., “Please select the response blue from the following options”). Participants who responded inconsistently across measures, provided many repetitive answers within a measure, and/or completed the survey in an unreasonably short time (i.e., < 30 min) were excluded.

2.2. Measures

2.2.1. Eating Pathology Symptoms Inventory (EPSI) (Forbush et al., 2013)

The EPSI assesses multiple dimensions of eating pathology, with items rated on a 5-point scale from 0 (never) to 4 (very often) based on the past 4 weeks. We included the 7-item Body Dissatisfaction subscale (Sample item: “I did not like how my body looked”). The Body Dissatisfaction subscale demonstrated excellent internal consistency (α = 0.88–0.92) across clinical and nonclinical samples, and good test-retest reliability (r = 0.74) over 2–4 weeks (Forbush et al., 2013). Women with EDs had the highest scores on the Body Dissatisfaction subscale, followed by general psychiatric outpatients, and college students (Forbush et al., 2013). In the current sample, the internal consistency estimate for EPSI Body Dissatisfaction was 0.90.

2.2.2. Commitment to Exercise Scale (CES) (Davis, Brewer, & Ratusny, 1993)

The CES is an 8-item questionnaire that assesses obligatory and pathological features of exercise, including the extent to which exercise impacts one’s self-worth, interferes with commitments, and is continued despite adverse consequences (Sample item: “Do you continue to exercise at times when you feel tired or unwell?”). In this study, items were rated on a 0 to 10 scale, with higher scores representing greater compulsive exercise. The CES demonstrates good internal consistency in non-clinical samples (α = 0.88–0.91) (Davis et al., 1993; McLaren, Gauvin, & White, 2001). Higher CES scores have been found in individuals with EDs compared to healthy controls (Davis, Blackmore,
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