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How Specific are the Relationships between Eating Disorder Behaviors and Perfectionism?

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Abstract

Perfectionism is associated with several mental disorders, including depression, anxiety, and eating disorders. The goal of this study was to test the specificity of the associations between perfectionism facets and eating disorder behaviors, by examining whether neuroticism and conscientiousness mediated or moderated associations between these variables. Participants from a representative community sample ($N=407$; 47% female) completed questionnaires assessing perfectionism, neuroticism, conscientiousness, and eating disorder behaviors. Neuroticism partially mediated associations between binge eating, restraint, body dissatisfaction, and maladaptive perfectionism facets. Neuroticism did not mediate associations between restriction and achievement striving perfectionism facets. Conscientiousness did not mediate any associations between perfectionism facets and eating disorder behaviors, yet Doubts about Actions interacted with conscientiousness to predict body dissatisfaction. Results indicate that neuroticism is key for understanding general risk factors that lead to myriad internalizing disorders, whereas maladaptive perfectionism has limited usefulness as a specific risk factor for eating disorder behaviors. Nevertheless, there is a unique association between dietary restraint and achievement striving dimensions of perfectionism that cannot be explained by higher-order personality traits.

Keywords

perfectionism; eating disorders; disordered eating; neuroticism; conscientiousness; personality

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1. Introduction

Perfectionism is associated with numerous psychological disorders including mood (Blatt, Zuroff, Bondi, Sanislow, and Piconis, 1998), anxiety (Kawamura, Hunt, Frost, and DiBartolo, 2001), and eating disorders (Bastiani, Rao, Weltzin, and Kaye, 1995; Lilenfeld et al., 2000). Higher initial levels of perfectionism are associated with treatment dropout among patients with anorexia nervosa (Sutandar-Pinnock, Woodside, Carter, Olmsted, and Kaplan, 2003) and perfectionism persists among patients with anorexia nervosa who have achieved long-term weight restoration (Bastiani et al, 1995; Sullivan, Bulik, Fear, and Pickering, 1998).

Given that unidimensional measures of perfectionism are strongly associated with eating disorders, research has begun to focus on associations between multidimensional perfectionism measures and eating disorder behaviors to clarify which aspects of perfectionism are most strongly associated with eating disorder behaviors. Studies examining the underlying structure of multidimensional perfectionism measures (e.g., the Frost Multidimensional Perfectionism Scale [FMPS] and Hewitt and Fletcher Multidimensional Perfectionism Scale [HFMPs]), have found evidence for two factors, reflecting *Maladaptive Perfectionism* (Concern over Mistakes, Doubts about Action, Parental Criticism, and Parental Expectations from the FMPS and Socially-Prescribed Perfectionism from the HFMPs) and *Achievement Striving* (Personal Standards and Organization from the FMPS and Self-Oriented Perfectionism and Other-Oriented Perfectionism from the HFMPs) (Frost, Heimberg, Holt, Mattia, Neubauer, 1993; Slaney, Rice, Mobley, Trippi, and Ashby, 2001). The associations between eating disorder behaviors and the two dimensions of perfectionism have been investigated in several studies. Anorexic symptoms are associated with elevated levels of both achievement striving (Chang, Ivezaj, Downey, Kashima, and Morady, 2008; Halmi et al., 2000; Hewitt, Flett, and Ediger, 1995) and maladaptive facets (Hewitt et al., 1995); although other research indicates that achievement striving is the strongest predictor of anorexic symptoms (Chang et al., 2008). Bulimic symptoms are strongly associated with maladaptive perfectionism (Chang et al., 2008; Halmi et al., 2000; Hewitt et al., 1995; Lilenfeld et al., 2000).

Research has begun to explore the mechanisms by which perfectionism influences eating disorder behaviors. One promising potential mechanism is higher-order personality traits. Maladaptive perfectionism is strongly positively correlated with neuroticism, whereas achievement striving is only modestly positively associated with neuroticism, but is strongly positively correlated with conscientiousness (Hill et al., 1997). Understanding the role of higher-order personality traits in the associations between eating disorder behaviors and perfectionism may contribute to an improved understanding of general risk factors that cut across eating, mood, and anxiety disorders, as well as contribute to knowledge about risk factors that are specific to eating pathology. For example, Bardone-Cone (2007) found that negative affect mediated the association between socially-prescribed perfectionism and bulimic symptoms, but did not mediate associations between self-oriented perfectionism and bulimic symptoms. Bardone-Cone interpreted these results as suggesting that only the achievement striving dimension of perfectionism accounts for unique variance in predicting bulimic symptoms. However, this study did not examine mediation between higher-order personality traits and dietary restraint, nor did it take into account the potential mediating/moderating role of conscientiousness.

Based on the results of previous studies, we hypothesized that neuroticism and/or conscientiousness will mediate or moderate the associations between perfectionism dimensions and eating disorder behaviors.

2. Method

2.1 Participants and Procedure

Participants ($N=407$; 47% female) were community adults recruited to take part in a study designed to develop and validate a new self-report measure of eating disorder behaviors. The University of Iowa's Institutional Review Board approved all study procedures. Participants reported a mean age of 38.24 (13.51). Participants were allowed to self-report multiple racial and ethnic identities, including: Caucasian (89.2%), African American (2.2%), Hispanic or Latino(a) (2.2%), Asian-American (6.4%), Native American/Alaskan Native (1.2%), Native Hawaiian/Pacific Islander (0.5%), and 2.2% 'Other'. Men reported a mean (SD) body mass index (BMI) of 26.77 (5.39) and women reported a mean (SD) body mass index of 25.95 (6.70).

2.1.1 Measures

Big Five Inventory (BFI) (John and Srivastava, 1999)—The BFI contains 44 items that assess five general traits according to the five-factor model of personality (only the Neuroticism and Conscientiousness scales were used in the present study). The BFI is widely used and psychometrically sound and has good internal consistency and strong convergent validity with the NEO-FFI (John and Srivastava, 1999).

Dutch Eating Behaviour Questionnaire (DEBQ)¹—(van Strien, 2005) contains 33 items assessing restrained, emotional, and external eating.

Eating Disorders Examination Questionnaire (EDE-Q) (Fairburn and Beglin, 1994)—The EDE-Q is a self-report questionnaire based on the EDE interview. The EDE-Q contains four rationally-derived subscales: Restraint, Eating Concerns, Shape Concerns, and Weight Concerns.

Frost Multidimensional Perfectionism Scale (FMPS) (Frost, Lahart, Rosenblate, 1991)—The FMPS is a 35-item scale consisting of six dimensions of perfectionism: Concern over mistakes, Personal standards, Parental expectations, Parental Criticism, Doubts about Action, and Organization.

Restraint Scale (RS) (Herman and Polivy, 1975)—The RS is a common measure of dietary restraint. Internal consistency is good to excellent (Gormally, Black, Daston, and Rardin, 1982).

Three Factor Eating Disorder Questionnaire (TFEQ) (Stunkard and Messick, 1985)—The TFEQ consists of three scales that are designed to measure Cognitive Control of Eating, Disinhibition, and Susceptibility to Hunger.

Statistical Analysis

Missing data was imputed using SAS version 9.2. Maximum-likelihood multiple imputation was carried out if 15% or less of the total responses for a questionnaire were missing, using 11 imputations per questionnaire. Other data were analyzed using Mplus Version 6.1 (Muthén and Muthén, 1998-2010).

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Exploratory factor analysis (EFA) with oblique rotation was carried out on the 11 subscales of the 4 eating pathology measures using robust maximum likelihood estimation (MLMV) with means and variance adjusted chi-square. MLMV was chosen because it is more robust against non-normality compared to traditional maximum likelihood estimation. CFA was used to examine the fit of the final EFA model.

Structural equation modeling (SEM) with MLMV was used to determine whether neuroticism and conscientiousness mediated or moderated the associations between perfectionism facets and eating disorder behaviors. The mediational roles of neuroticism and conscientiousness were tested by constructing SEMs in which a latent disordered eating factor was regressed on a perfectionism facet and a higher-order personality trait with the personality variable also regressed on perfectionism (see Figure 1). Consistent with a structural equation modeling approach to testing mediation/moderation (MacKinnon, Fairchild, and Fritz, 2007), significant indirect effects from perfectionism to disordered eating through higher-order personality traits were interpreted as evidence for partial mediation (MacKinnon, Fairchild, and Fritz, 2007), whereas non-significant indirect effects indicate full mediation (see Figure 1 for explanatory path diagram and additional details). To test for moderation, the product of a higher-order personality trait and a perfectionism facet was added to SEMs. Eating disorder behavior scores were regressed on perfectionism facets, higher-order personality traits, and perfectionism facets $\times$ higher-order personality traits to assess whether the effects (i.e., β values) of perfectionism facets $\times$ neuroticism or perfectionism facets $\times$ conscientiousness were significant, while controlling for the perfectionism facets and higher-order personality traits.

3. Results

EFA for the eating disorder behavior scales resulted in four factors. The fourth factor was not retained because only the DEBQ External Eating scale loaded above $|\lambda_{0.40}|$ on this factor. The RS had similar factor loadings on all three factors, and was removed from subsequent analyses. This resulted in a three-factor model. Binge Eating (Factor 1) consisted of high loadings for DEBQ Emotional Eating, DEBQ External Eating, TFEQ Disinhibition, and TFEQ Susceptibility to Hunger scales. Restraint (Factor 2) consisted of high loadings for EDE-Q Restraint, DEBQ Restrained Eating, and TFEQ Cognitive Control of Eating scales. Body Dissatisfaction (Factor 3) consisted of high loadings for EDE-Q Eating Concerns, EDE-Q Shape Concerns, and EDE-Q Weight Concerns scales.

Confirmatory factor analysis (CFA) was used to examine the fit of the three-factor EFA model. CFA indices for the evaluation of model fit were good to adequate, suggesting that the three factor model was supported by the data ($\chi^2=138.89$, $df=32$, $CFI=.953$, $TLI=.934$, $RMSEA=.093$, $SRMR=.062$).

Concern over Mistakes, Parental Criticism, and Doubts about Action were moderately and positively correlated with Binge Eating and Body Dissatisfaction ($r=0.373$, 0.296 , and 0.394 for CM, PC, and D and BE, $p<0.01$; $r=0.361$, 0.282 , and 0.332 for CM, PC, and D and BD $p<0.01$). Concern over Mistakes, Personal Standards, and Organization had positive correlations with Restraint ($r=0.169$ and 0.186 for CM, O and R, $p<0.01$; $r=0.128$ for PS and R, $p<0.05$).

The associations between perfectionism facets, Binge Eating, and Body Dissatisfaction and the association between Concern over Mistakes and Restraint substantially decreased after controlling for neuroticism, indicating that neuroticism partially mediated these associations (see Table 1). The same analyses were conducted for Conscientiousness, however,

mediational effects were not found for these analyses (data available upon request from the first author).

SEM was used to test whether neuroticism and conscientiousness moderated the significant associations between the facets of perfectionism and eating disorder behaviors. Results indicated that Doubts about Actions exhibited an interaction effect with conscientiousness in the prediction of Body Dissatisfaction ($\beta=0.101$). The other interaction terms of perfectionism facets $\times$ neuroticism $\times$ conscientiousness were non-significant.

4. Discussion

The purpose of the present study was to investigate the specificity of the associations between eating disorder behaviors and facets of perfectionism by examining whether neuroticism and conscientiousness mediated or moderated associations between eating disorder behaviors and perfectionism dimensions. We found that neuroticism partially mediated associations between Binge Eating, Restraint, and Body Dissatisfaction and maladaptive perfectionism facets. Contrary to expectation, neither conscientiousness nor neuroticism mediated any of the associations between achievement striving dimensions of perfectionism, body dissatisfaction, binge eating, or restraint, and only Doubts about Actions exhibited a small interaction effect (i.e., moderation) with Conscientiousness in the prediction of Body Dissatisfaction.

The associations between binge eating, restraint, body dissatisfaction and maladaptive perfectionism dimensions were largely due to non-specific effects of neuroticism acting as an underlying third variable. Results suggest that the high levels of maladaptive perfectionism observed across eating, mood and anxiety disorders is largely due to shared propensity to experience negative emotions.

The association between maladaptive perfectionism facets and binge eating is intriguing, particularly given prior research suggesting that binge eating disorder is not associated with elevated levels of perfectionism (Fairburn et al., 1998). Other research, however, suggests that the association between binge eating and perfectionism is due to the presence of other eating disorder behaviors among some who binge (Forbush, Heatherton, and Keel, 2007), which may explain our seemingly counterintuitive findings. Research that has sought to explain these complexities indicates that negative affect, caused by failure to achieve one's maladaptive perfectionistic standards, may increase one's body dissatisfaction, which by interacting with low self-esteem, leads to counterproductive behavior such as binge eating, as described by Vohs and colleagues (2001).

The study has certain limitations that impact the interpretation of our results. First, only one measure of perfectionism was used. Thus we were unable to examine associations between higher-order personality traits, socially-prescribed perfectionism, self-oriented perfectionism, and eating disorder behaviors. Second, we were unable to examine sub-factors of conscientiousness. Some research has suggested that sub-factors of conscientiousness (e.g., orderliness and industriousness) differentially relate to neuroticism and psychopathology, inducing suppressor effects when considering the superordinate construct (DeYoung, Quilty, and Peterson, 2007). It is possible that more detailed measures of conscientiousness would identify differential associations between facets of conscientiousness, neuroticism, and eating pathology.

The study also has several notable strengths. Our study was based on a large sample of community-dwelling adults that had adequate numbers of both men and women. Further, few previous studies in the eating disorders literature have utilized SEM to examine moderation/mediation, despite research indicating that SEM is more powerful for detecting

mediation effects if they are present in the population (Iacobucci, Saldanha, and Deng, 2007). This study contributes to limited prior work on associations between perfectionism facets and eating disorder behaviors. The role of higher-order personality traits in these associations suggests neuroticism is key for understanding general risk factors that lead to myriad internalizing disorders, whereas maladaptive perfectionism has limited usefulness as a specific risk factor for eating disorder behaviors.

Investigating the specificity of the associations between perfectionism facets and eating disorder behaviors may contribute to an improved understanding of the general and specific personality traits that are implicated in the etiology, course, and maintenance of eating and co-occurring disorders.

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References

- Bachner-Melman R, Lerer E, Zohar AH, Kremer I, Elizur Y, Nemanov L, Ebstein RP. Anorexia nervosa, perfectionism, and dopamine D4 receptor (DRD4). *American Journal of Medical Genetics. Part B, (Neuropsychiatric Genetics): The Official Publication of the International Society of Psychiatric Genetics*. 2007; 144B:748–756.
- Bardone-Cone A. Self-oriented and socially prescribed perfectionism dimensions and their associations with disordered eating. *Behaviour Research and Therapy*. 2007; 45(8):1977–1986. doi: 10.1016/j.brat.2006.10.004. [PubMed: 17147952]
- Bardone-Cone A, Wonderlich SA, Frost RO, Bulik CM, Mitchell JE, Uppala S, Simonich H. Perfectionism and eating disorders: Current status and future directions. *Clinical Psychology Review*. 2007; 27(3):384–405. doi:10.1016/j.cpr.2006.12.005. [PubMed: 17267086]
- Baron RM, Kenny DA. The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*. 1986; 51(6):1173–1182. doi:10.1037/0022-3514.51.6.1173. [PubMed: 3806354]
- Bastiani AM, Rao R, Weltzin T, Kaye WH. Perfectionism in anorexia nervosa. *International Journal of Eating Disorders*. 1995; 17(2):147–152. doi:10.1002/1098-108X(199503)17:2<147::AID-EAT2260170207>3.0.CO;2-X. [PubMed: 7757095]
- Blatt SJ, Quinlan DM, Pilkonis PA, Shea MT. “Impact of perfectionism and need for approval on the brief treatment of depression: The national institute of mental health treatment of depression collaborative research program revisited”: Correction. *Journal of Consulting and Clinical Psychology*. 1995; 63(3):494. doi:10.1037/0022-006X.63.3.494.
- Blatt SJ, Zuroff DC, Bondi CM, Sanislow Charles A. I,II, Pilkonis PA. When and how perfectionism impedes the brief treatment of depression: Further analyses of the national institute of mental health treatment of depression collaborative research program. *Journal of Consulting and Clinical Psychology*. 1998; 66(2):423–428. doi:10.1037/0022-006X.66.2.423. [PubMed: 9583345]
- Bulik CM, Hebebrand J, Keski-rahkonen A, Klump KL, Reichborn-kjennerud T, Mazzeo SE, Wade TD. Genetic epidemiology, endophenotypes, and eating disorder classification. *The International Journal of Eating Disorders*. 40(Suppl):S52. [PubMed: 17573683]
- Chang EC, Ivezaj V, Downey CA, Kashima Y, Morady AR. Complexities of measuring perfectionism: Three popular perfectionism measures and their relations with eating disturbances and health

- behaviors in a female college student sample. *Eating Behaviors*. 2008; 9(1):102–110. doi:10.1016/j.eatbeh.2007.06.003. [PubMed: 18167328]
- DeYoung CG, Quilty LC, Peterson JB. Between facets and domains: 10 aspects of the Big Five. *Journal of Personality and Social Psychology*. 2007; 93(5):880–896. doi: 10.1037/0022-3514.93.5.880. [PubMed: 17983306]
- Fairburn CG, Bèglin SJ. Assessment of eating disorders: Interview or self-report questionnaire? *International Journal of Eating Disorders*. 1994; 16(4):363–370. [PubMed: 7866415]
- Fairburn CG, Doll HA, Welch SL, Hay PJ, Davies BA, O'Connor ME. Risk factors for binge eating disorder: A community-based, case-control study. *Archives of General Psychiatry*. 1998; 55(5): 425–432. doi:10.1001/archpsyc.55.5.425. [PubMed: 9596045]
- Forbush K, Heatherton TF, Keel PK. Relationships between perfectionism and specific disordered eating behaviors. *International Journal of Eating Disorders*. 2007; 40(1):37–41. doi:10.1002/eat.20310. [PubMed: 16958125]
- Frost RO, Heimberg RG, Holt CS, Mattia JJ. A comparison of two measures of perfectionism. *Personality and Individual Differences*. 1993; 14(1):119–126. al, e. doi: 10.1016/0191-8869(93)90181-2.
- Frost RO, Lahart CM, Rosenblate R. The development of perfectionism: A study of daughters and their parents. *Cognitive Therapy and Research*. 1991; 15(6):469–489. doi:10.1007/BF01175730.
- Gormally J, Black S, Daston S, Rardin D. The assessment of binge eating severity among obese persons. *Addictive Behaviors*. 1982; 7(1):47–55. doi:10.1016/0306-4603(82)90024-7. [PubMed: 7080884]
- Halmi KA, Sunday SR, Strober M, Kaplan A, Woodside DB, Fichter M, Kaye WH. Perfectionism in anorexia nervosa: Variation by clinical subtype, obsessionality, and pathological eating behavior. *The American Journal of Psychiatry*. 2000; 157(11):1799–1805. doi:10.1176/appi.ajp.157.11.1799. [PubMed: 11058477]
- Herman CP, Polivy J. Anxiety, restraint, and eating behavior. *Journal of Abnormal Psychology*. 1975; 84(6):666–672. doi:10.1037/0021-843X.84.6.666.
- Hewitt PL, Flett GL, Ediger E. Perfectionism traits and perfectionistic self-presentation in eating disorder attitudes, characteristics, and symptoms. *International Journal of Eating Disorders*. 1995; 18(4):317–326. doi:10.1002/1098-108X(199512)18:4<317::AID-EAT2260180404>3.0.CO;2-2. [PubMed: 8580917]
- Hill RW, McIntire K, Bacharach VR. Perfectionism and the big five factors. *Journal of Social Behavior & Personality*. 1997; 12(1):257–270.
- Iacobucci D, Saldanha N, Deng X. A meditation on mediation: Evidence that structural equations models perform better than regressions. *Journal of Consumer Psychology*. 2007; 17(2):139–153. doi:10.1016/S1057-7408(07)70020-7.
- John, OP.; Srivastava, S. The big five trait taxonomy: History, measurement, and theoretical perspectives.. In: Pervin, LA.; John, OP., editors. *Handbook of personality: Theory and research*. 2nd ed.. Guilford Press; New York, NY, US: 1999. p. 102-138.
- Kawamura KY, Hunt SL, Frost RO, DiBartolo PM. Perfectionism, anxiety, and depression: Are the relationships independent? *Cognitive Therapy and Research*. 2001; 25(3):291–301. doi:10.1023/A:1010736529013.
- Lilenfeld LRR, Stein D, Bulik CM, Strober M, Plotnicov K, Pollice C, Kaye WH. Personality traits among current eating disordered, recovered and never ill first-degree female relatives of bulimic and control women. *Psychological Medicine: A Journal of Research in Psychiatry and the Allied Sciences*. 2000; 30(6):1399–1410. doi:10.1017/S0033291799002792.
- Lundh L, Öst L. Attentional bias, self-consciousness and perfectionism in social phobia before and after cognitive-behaviour therapy. *Scandinavian Journal of Behaviour Therapy*. 2001; 30(1):4–16. doi:10.1080/028457101300140428.
- MacKinnon DP, Fairchild AJ, Fritz MS. Mediation analysis. *Annual Review of Psychology*. 2007; 58:593–614. doi:10.1146/annurev.psych.58.110405.085542.
- Muthén, LK.; Muthén, BO. *Mplus Users' Guide*. Sixth Edition. Muthén & Muthén; Los Angeles, CA: 1998-2010.

- Parker WD, Adkins KK. A psychometric examination of the multidimensional perfectionism scale. *Journal of Psychopathology and Behavioral Assessment*. 1995; 17(4):323–334. doi:10.1007/BF02229054.
- Slaney RB, Rice KG, Mobley M, Trippi J, Ashby JS. The revised almost perfect scale. *Measurement and Evaluation in Counseling and Development*. 2001; 34(3):130–145.
- Steiger H, Bruce KR. Phenotypes, endophenotypes, and genotypes in bulimia spectrum eating disorders. *Canadian Journal of Psychiatry/Revue Canadienne De Psychiatrie*. 52(4):220. [PubMed: 17500302]
- Stunkard AJ, Messick S. The three-factor eating questionnaire to measure dietary restraint, disinhibition and hunger. *Journal of Psychosomatic Research*. 1985; 29(1):71–83. doi: 10.1016/0022-3999(85)90010-8. [PubMed: 3981480]
- Sullivan PF, Bulik CM, Fear JL, Pickering A. Outcome of anorexia nervosa: A case-control study. *The American Journal of Psychiatry*. 1998; 155(7):939–946. [PubMed: 9659861]
- Sutandar-Pinnock K, Woodside DB, Carter JC, Olmsted MP, Kaplan AS. Perfectionism in anorexia nervosa: A 6-24-month follow-up study. *International Journal of Eating Disorders*. 2003; 33(2): 225–229. doi:10.1002/eat.10127. [PubMed: 12616589]
- van Strien, T. Dutch eating behaviour questionnaire. Boom Test Publishers; Amsterdam, Netherlands: 2005.
- Vohs KD, Voelz ZR, Pettit JW, Bardone AM, Katz J, Abramson LY, Joiner TE Jr. Perfectionism, body dissatisfaction, and self-esteem: An interactive model of bulimic symptom development. *Journal of Social and Clinical Psychology*. 2001; 20(4):476–497. doi:10.1521/jscp.20.4.476.22397.

Highlights

- Neuroticism mediated most eating disorder and perfectionism associations
- Neuroticism did not mediate restriction and achievement striving perfectionism
- Conscientiousness did not mediate eating disorder and perfectionism associations
- Doubts about actions and conscientiousness moderated body dissatisfaction

a) Direct Pathway

b) Indirect or Mediated Pathway

Figure 1.

Mediation paths in structural equations for Neuroticism and Conscientiousness. N = Neuroticism; C = Conscientiousness; CM = Concern over Mistakes; PC = Parental Criticism; D = Doubts about Action; PS = Personal Standards; O = Organization; BE = Binge Eating; BD = Body Dissatisfaction; R = Restriction. Path c is the direct effect of perfectionism facets on BE/BD/R without any control variables. Path c' is the direct effect of perfectionism facets on BE/BD/R after controlling for the neuroticism/conscientiousness. The products of paths a and b represent the indirect effect of perfectionism facets through neuroticism/conscientiousness on BE/BD/R.

Mediating Role of Neuroticism in the Associations between Perfectionism Facets and Binge Eating, Body Dissatisfaction, and Restriction

Table 1

Variables	Binge Eating				Body Dissatisfaction				Restriction			
	B	SE	B	β	B	SE	B	β	B	SE	B	β
Concern Over Mistakes												
Path a	.411	.038	.451	**	.411	.038	.451	**	.411	.039	.451	**
Path b	.712	.091	.416	**	.041	.006	.373	**	.029	.010	.175	**
Path c' (direct)	.298	.085	.191	**	.020	.006	.193	**	.014	.009	.089	
Path ab (indirect)	.292	.049	.188	**	.017	.003	.168	**	.012	.004	.079	**
Personal Standards												
Path a	/	/	/	/	/	/	/	/	.067	.061	.053	
Path b	/	/	/	/	/	/	/	/	.035	.009	.208	**
Path c' (direct)	/	/	/	/	/	/	/	/	.024	.011	.116	*
Path ab (indirect)	/	/	/	/	/	/	/	/	.002	.002	.011	
Parental Criticism												
Path a	.584	.089	.339	**	.584	.088	.339	**	/	/	/	/
Path b	.773	.093	.452	**	.046	.006	.411	**	/	/	/	/
Path c' (direct)	.433	.158	.147	**	.027	.010	.143	/	/	/	/	/
Path ab (indirect)	.452	.088	.153	**	.027	.005	.139	/	/	/	/	/
Doubts About Action												
Path a	1.092	.091	.543	**	1.092	.093	.543	**	/	/	/	/
Path b	.692	.099	.405	**	.044	.007	.396	**	/	/	/	/
Path c' (direct)	.615	.188	.179	**	.026	.013	.117	**	/	/	/	/
Path ab (indirect)	.755	.134	.220	**	.048	.009	.215	**	/	/	/	/
Organization												
Path a	/	/	/	/	/	/	/	/	.123	.080	.084	

Variables	Binge Eating			Body Dissatisfaction			Restriction		
	B	SE	B	SE	B	SE	B	SE	B
Path b	/	/	/	/	/	/	.033	.009	.200**
Path c' (direct)	/	/	/	/	/	/	.041	.012	.171**
Path ab (indirect)	/	/	/	/	/	/	.004	.003	.017

Note. Path ab represents the indirect effects from perfectionism facets to eating disorder behaviors through neuroticism (see Path ab in Figure 1). Significant indirect effects indicate the presence of mediation. Mediation was not tested for non-significant direct effects, which is why results are not provided for all eating disorder behaviors and perfectionism facets.

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