Eating and Weight Disorders, in press

Eating disorder symptoms and the 2 × 2 model of perfectionism: Mixed perfectionism is the most maladaptive combination

Rita Maria Esposito

Sapienza University of Rome

Joachim Stoeber

University of Kent

Lavinia E. Damian

Babeş-Bolyai University

Guido Alessandri

Sapienza University of Rome

Caterina Lombardo

Sapienza University of Rome

Author Note

Rita Maria Esposito, Caterina Lombardo, Guido Alessandri, Department of Psychology, Sapienza University of Rome; Joachim Stoeber, School of Psychology, University of Kent; Lavinia Damian, Department of Psychology, Babeş-Bolyai University.

Correspondence concerning this article should be addressed to Rita Maria Esposito, Faculty of Medicine and Psychology, Sapienza University of Rome, Rome, Italy. Phone: +39 06 49917529; e-mail: ritamaria.esposito@uniroma1.it

Abstract

Purpose.

The 2 × 2 model of perfectionism (Gaudreau & Thompson, 2010) represents an important addition to the perfectionism literature, but so far has not been studied in relation to disordered eating.

Method.

Using the 2 × 2 model as analytic framework, this study examined responses from a convenience sample of 716 participants aged 19-68 years (71% female) investigating how self-oriented perfectionism (SOP) and socially prescribed perfectionism (SPP) predicted individual differences in eating disorder symptoms, additionally controlling for body mass index, gender, and age.

Results.

Results showed a significant SOP × SPP interaction indicating that the combination of high SOP and high SPP—called "mixed perfectionism"—was associated with the highest levels of eating disorder symptoms.

Conclusions.

The findings demonstrate the utility of the 2 × 2 model of perfectionism as an analytic framework for examining perfectionism and disordered eating. Moreover, they suggest that mixed perfectionism is the most maladaptive form of perfectionism, when it comes to disordered eating, such that having high levels of SPP combined with high levels of SOP represents the most maladaptive combination of perfectionism in terms of risk of eating disorder.

Keywords

2 × 2 model of perfectionism; self-oriented perfectionism; socially prescribed perfectionism; eating disorder symptoms; body mass index; gender.

Introduction

Over the past 30 years, research has produced converging evidence that perfectionism is closely related to eating disorders (see [1] for a review). Perfectionism is a personality disposition characterized by striving for flawlessness and setting exceedingly high standards of performance accompanied by overly critical evaluations of one's behavior and fear of negative evaluations by others [2]. Furthermore, research has demonstrated that perfectionism is best conceptualized as a multidimensional construct, and different forms of perfectionism have shown different relationships with indicators of psychological maladjustment (see [3] for a review). Moreover, the recently introduced 2 × 2 model of perfectionism [4] posits that it is important to investigate within-person combinations of different forms of perfectionism to understand how perfectionism relates to maladjustment. Whereas there is considerable support for the 2 × 2 model across various areas of psychological research (e.g., [5-8]), the model has not yet been investigated in relation to disordered eating. Hence, the aim of the present study was to provide a first investigation using the 2 × 2 model as a theoretical and analytic framework to examine how two different forms of perfectionism—self-oriented perfectionism and socially prescribed perfectionism—predict eating disorder symptoms.

Self-oriented and socially prescribed perfectionism

As regards multidimensional conceptualizations of perfectionism, one of the most influential and widely researched models is Hewitt and Flett's [9] model. With the recognition that perfectionism has personal and social aspects, the model differentiates two main forms of perfectionism: self-oriented perfectionism and socially prescribed perfectionism.[1] Self-oriented perfectionism comprises internally motivated beliefs that striving for perfection and being perfect are important. Self-oriented perfectionists have exceedingly high personal standards, strive for perfection, expect to be perfect, and are highly self-critical if they fail to meet these expectations. In contrast, socially prescribed perfectionism comprises externally motivated beliefs that striving for perfection and being perfect are important to others. Socially prescribed perfectionists believe that others expect them to be perfect, and that others will be highly critical of them if they fail to meet these expectations [9,10].

The 2 × 2 model of perfectionism [4] provides an analytic framework to investigate the relationships of self-

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[1]The model differentiates a third form, other-oriented perfectionism that is unrelated to eating disorders [1] and so was disregarded in this article.

oriented and socially prescribed perfectionism using a regression analytic approach [11] to examine the two forms' unique and combined effects and probe for possible interaction effects [6,12,13]. In this, the model examines differences between four within-person combinations of self-oriented (SOP) and socially prescribed perfectionism (SPP): pure SOP (high SOP, low SPP), pure SPP (low SOP, high SPP), mixed perfectionism (high SOP, high SPP), and non-perfectionism (low SOP, low SPP). Furthermore, the 2 × 2 model puts forward a number of hypotheses regarding differences between the four combinations [14]. When applied to the relationships that SOP and SPP show with negative outcomes (such as eating disorder symptoms) and using "more maladaptive" as shorthand for "is associated with higher levels of negative outcomes," Hypothesis H1 states that non-perfectionism is more maladaptive than pure SOP (H1A), pure SOP is more maladaptive than non-perfectionism (H1B), or that the two combinations do not differ significantly in terms of maladaptiveness (H1C); Hypothesis H2 states that pure SPP is more maladaptive than non-perfectionism; Hypothesis H3 states that pure SPP is more maladaptive than mixed perfectionism; and Hypothesis H4 states that mixed perfectionism is more maladaptive than pure SOP (see [14], Fig. 1).

The 2 × 2 model of perfectionism has been examined in relation to various positive and negative outcomes such academic achievement and life satisfaction on the one hand and negative affect and depressive symptoms on the other [4-6,13,15]. Overall, the findings supported all hypotheses of the model, except Hypothesis H1B (pure SOP is more maladaptive than non-perfectionism). Furthermore, Hypothesis H3 (pure SPP is more maladaptive than mixed perfectionism) has received empirical support contradicting expectations from the tripartite model of perfectionism according to which mixed perfectionism should be the most maladaptive within-person combination of perfectionism [16]. The reason for this is that, in all previous studies that examined the 2 × 2 model following Gaudreau's [11] regression approach, negative outcomes were examined with which self-oriented perfectionism showed nonsignificant or negative unique relationships (i.e., relationships statistically controlling for the effect of socially prescribed perfectionism). Consequently, we should expect a different pattern of findings—and no support for Hypothesis H3—when negative outcomes are examined with which both self-oriented perfectionism and socially prescribed perfectionism show unique positive relationships. Eating disorder symptoms may be such an outcome.

Support for this suggestion comes from a study on eating disorder symptoms in adolescents by Boone et al. [17]. The study examined personal standards perfectionism (PSP which is closely related to self-oriented perfectionism) and evaluative concerns perfectionism (ECP which is closely related to socially prescribed

perfectionism), employed cluster analysis, and found four clusters similar to the four within-person combinations of the 2 × 2 model of perfectionism: pure PSP (high PSP, average ECP), pure ECP (average PSP, high ECP), mixed perfectionism (high PSP, high ECP), and non-perfectionism (low PSP, low ECP). When the clusters were compared with respect to eating disorder symptoms (controlling for body mass index, gender, and age), results showed that the mixed perfectionism cluster showed significantly higher levels of eating disorder symptoms than all other clusters, including the pure ECP cluster. Contrary to H3 of the 2 × 2 model, mixed perfectionism was more maladaptive than pure ECP.

The present study

Numerous studies have investigated the relationships of self-oriented and socially prescribed perfectionism and disordered eating. Overall findings suggest that both self-oriented perfectionism and socially prescribed perfectionism are positively related to eating disorder symptoms [1,18-21]. Few studies, however, have examined the unique relationships that self-oriented and socially prescribed perfectionism show with eating disorder symptoms, that is, their relationships controlling for the overlap between the two forms of perfectionism by means of partial correlations or regression analyses [1,19,21]. Moreover, to our knowledge, no study so far has investigated possible interaction effects of self-oriented and socially prescribed perfectionism in predicting eating disorder symptoms.

Against this background, the aim of the present study was to present a first investigation of the relationships that self-oriented and socially prescribed perfectionism show with eating disorder symptoms using the 2 × 2 model of perfectionism as theoretical and analytic framework. Because the literature on perfectionism and disordered eating suggests that both self-oriented perfectionism (SOP) and socially prescribed perfectionism (SPP) show unique positive relationships with eating disorder symptoms, we expected to find support for Hypotheses H1B (pure SOP is more maladaptive than non-perfectionism), H2 (pure SPP is more maladaptive than non-perfectionism), and H4 (mixed perfectionism is more maladaptive than pure SOP), but not H3 (pure SPP is more maladaptive than mixed perfectionism). On the contrary and in line with Boone et al.'s [17] findings on perfectionism and eating disorder symptoms, we expected that mixed perfectionism would be more maladaptive than pure SPP.

Method

Participants and procedure

A convenience sample of 716 participants (513 female, 202 male, 1 undeclared) from different parts of Italy

was recruited by two research assistants (RAs) supervised by the first author. RAs approached friends, acquaintances, and family members and their friends, acquaintances, and family members. The aim of this approach was to obtain a more representative sample with better age representativeness than the undergraduate samples typically used in studies on perfectionism and disordered eating (cf. [18]). Consequently, our sample comprised participants from 19-68 years of age (M = 26.7 years, SD = 8.8).

The study was approved by the ethics committee of the Department of Psychology of Sapienza University of Rome. Participation was voluntary, and participants received no financial compensation. Before completing the measures, all participants signed an informed consent form.

Measures

To measure self-oriented (SOP) and socially prescribed perfectionism (SPP), we used the respective scales of the Italian version of the Hewitt–Flett Multidimensional Perfectionism Scale (HF-MPS [9]; Italian version: [22]) capturing SOP with 15 items (e.g., "I demand nothing less than perfection of myself") and SPP with 15 items (e.g., "People expect nothing less than perfection from me"). The HF-MPS is a widely used measure of perfectionism and has shown reliability and validity in numerous studies (see [10] for a review). Items are answered on a 1-7 scale. In the present study, both scores showed good to excellent reliability (Cronbach's alphas = .90 and .82).

To measure eating disorder symptoms, we used the Disordered Eating Questionnaire (DEQ [23]). The DEQ is one-dimensional self-report measure of the presence and intensity of eating disorder symptoms. Following the diagnostic criteria of the DSM-IV-TR [24], the DEQ comprises 20 items capturing eating restrictions, intrusive thoughts, binges, and body shape/weight concerns over the past three months. The DEQ has shown to be a reliable and valid instrument for a comprehensive assessment of eating disorder symptoms in previous studies [25]. Items are answered on a 0-5 (Items 1-14) and 0-6 scale (Items 16-20). In the present study, scores showed excellent reliability (Cronbach's alpha = .92).

To control for participants' body size, we asked participants to indicate their height (cm) and weight (kg) and, from their answers, computed their body mass index (BMI). The BMI is the most widely used measure of body size accounting for height [26]. BMIs calculated from self-reported weight and height have shown high correlations (rs > .90) with BMIs from objective measures [25].

Data screening

Forty-six participants did not indicate their height or weight so their BMI could not be computed and were excluded from the further analyses. A further 41 participants did not complete the DEQ and were also excluded.

With this, our final sample comprised 629 participants (469 female, 160 male). Of the female participants (mean age = 25.9 years, *SD* = 7.8), 141 (30.1%) had a DEQ score > 30 suggesting the possible presence of an eating disorder (see [25] for details); and of the male participants (mean age = 30.03, *SD* = 10.9), 14 (8.8%) had a DEQ score > 30. All statistical analyses were conducted with IBM SPSS Version 23.0.

Results

Correlation analyses

First, we inspected the bivariate correlations between all variables including BMI, gender, and age (see Table 1). Both self-oriented perfectionism (SOP) and socially prescribed perfectionism (SPP) showed positive correlations with eating disorder symptoms. Furthermore, all control variables showed significant correlations with eating disorder symptoms. BMI and gender (female) showed positive correlations indicating that participants with a larger body size and women reported higher levels of eating disorder symptoms than participants with a smaller body size and men. In contrast, age showed a negative correlation. In line with previous findings [27], older participants reported lower levels of eating disorder symptoms than younger participants.

Regression analyses

Next, we conducted a moderated regression analysis with SOP and SPP as predictors and eating disorder symptoms as criterion, controlling for BMI, gender, and age. In this, we followed the procedures detailed by Gaudreau [11] and centered all predictors as suggested by Aiken and West [28]. The analyses comprised three steps: In Step 1, we entered the control variables (BMI, gender, age); in Step 2, we entered SOP and SPP; and in Step 3, we entered the interaction of SOP and SPP. Results are shown in Table 2.

As expected, both SOP and SPP showed unique positive main effects in predicting eating disorder symptoms (see Table 2, Step 2). The main effects, however, were qualified by a significant interaction of SOP ×SPP (see Table 2, Step 3). Consequently, we conducted simple slopes analyses to examine this interaction plotting predicted values for eating disorder symptoms for all combinations of low (–1 *SD*) versus high (+1 *SD*) levels of SOP and SPP (cf. [28]). The results are shown in Figure 1. The analyses showed that SPP positively predicted eating disorder symptoms for participants high in SOP ($B = 0.44$, $SE = 0.06$, $p < .001$) and for participants low in SOP ($B = 0.22$, $SE = 0.07$, $p < .01$). In contrast, SOP positively predicted eating disorder symptoms only for participants high in SPP ($B = 0.20$, $SE = 0.06$,$p < .001$), but not for participants low in SPP ($B = 0.04$, $SE = 0.05$, $p = .48$). Probing the mean differences between the four within-combinations of perfectionism [11] indicated that all mean differences shown in Figure 1 were significant, except the mean difference between non-perfectionism and pure SOP.

Discussion

The aim of the present study was to present a first investigation of the relationships that self-oriented perfectionism (SOP) and socially prescribed perfectionism (SPP) show with eating disorder symptoms using the 2 × 2 model of perfectionism as theoretical and analytic framework [11,4]. In particular, the study investigated the unique effects of SOP and SPP, probed for a possible interaction of SOP and SPP, and examined the mean differences between four with-person combinations of perfectionism: pure SOP (high SOP, low SPP), pure SPP (low SOP, high SPP), mixed perfectionism (high SOP, high SPP), and non-perfectionism (low SOP, low SPP).

Results showed a significant interaction of SOP and SPP in predicting eating disorder symptoms. When simple slopes analyses were conducted to examine the interaction, the results showed that mixed perfectionism was associated with the highest levels of eating disorder symptoms and that these levels were significantly higher than those associated with pure SOP, pure SPP, and non-perfectionism. Moreover, pure SPP was associated with higher levels of eating disorder symptoms than pure SOP and non-perfectionism. Consequently, our findings provide support for H1C (pure SOP and non-perfectionism do not differ significantly), H2 (pure SPP is more maladaptive than non-perfectionism), H4 (mixed perfectionism is more maladaptive than pure SOP), but not for H3 (pure SPP is more maladaptive than mixed perfectionism) of the 2 × 2 model. On the contrary, and in line with Boone et al.'s [17] findings, mixed perfectionism was more maladaptive than pure SPP. However, we found no support for H1B (pure SOP is more maladaptive than non-perfectionism). Consequently, Hypothesis H1B continues to be the hypothesis of the 2 × 2 model of perfectionism that, to our knowledge, still has not received any empirical support.

The finding that mixed perfectionism was the most maladaptive combination of perfectionism regarding eating disorder symptoms has implications for research on perfectionism and disordered eating because it shows the importance of taking interaction effects of self-oriented and socially prescribed perfectionism into account. If our analyses had not gone beyond examining main effects (Table 2, Step 2), the conclusion would have been that both self-oriented and socially prescribed perfectionism show unique positive relationships with eating disorder symptoms (cf. [1,18]). Only when the interaction of self-oriented and socially prescribed perfectionism was examined (Table 2, Step 3), it became clear that the positive relationships were restricted to socially prescribed perfectionism because, for self-oriented perfectionism, they were significant only for participants who showed high levels of socially prescribed perfectionism, but not for participants who showed low levels. Moreover, participants showing high levels of both forms of perfectionism (mixed perfectionism) showed the highest levels of eating disorder symptoms.

One possible explanation for the finding that mixed perfectionism was more maladaptive than pure socially prescribed perfectionism is that individuals who hold internally motivated beliefs that striving for perfection and being perfect are important (i.e., who are high in self-oriented perfectionism) may be more likely to internalize the social pressure for an ideal body and for thinness if they also hold externally motivated beliefs that striving for perfection and being perfect are important (i.e., if they are also high in socially prescribed perfectionism). Consequently, they may experience higher pressure to restrict their eating than individuals who perceive the same social pressure, but do not internalize this pressure (i.e., individuals who are high in socially prescribed perfectionism, but not in self-oriented perfectionism). Because self-oriented perfectionism has been associated with increased effort towards the attainment of one's goals [29], individual high in socially prescribed perfectionists whose goal is to become thin and restrict their eating may be more "successful" in attaining this goal if they are high in self-oriented perfectionisms, and consequently show higher eating disorder symptoms than individuals high in socially prescribed perfectionism who are low in self-oriented perfectionism.

The finding that mixed perfectionism was the most maladaptive combination of perfectionism also has implications for research on perfectionism because it supports the proposition of the tripartite model that mixed perfectionism is the most maladaptive form of perfectionism. The tripartite model (which was first suggested by Parker,[30]) differentiates three within-person combinations of perfectionism representing healthy perfectionists (high perfectionistic strivings, low perfectionistic concerns), unhealthy perfectionists (high perfectionistic strivings, high perfectionistic concern), and nonperfectionists (low perfectionistic strivings) [16]. If we use self-oriented perfectionism (SOP) and socially prescribed perfectionism (SPP) as indicators of perfectionistic strivings and perfectionistic concerns, and then compare the tripartite model and the 2 × 2 model [4], healthy perfectionists correspond to pure SOP (high SOP, low SPP), unhealthy perfectionists to mixed perfectionism (high SOP, high SPP), and nonperfectionists to the combination of pure SPP (low SOP, high SPP) and non-perfectionism (low SOP, low SPP). According to the tripartite model, mixed perfectionism is the most maladaptive combination. According to the 2 × 2 model, pure SPP is. Because we found mixed (high SOP, high SPP) to be the most maladaptive form (and significantly more maladaptive than pure SPP), the finding supports the tripartite model. Note, however, that the tripartite model not only fails to differentiate pure SPP and non-perfectionism—which we found to show significant differences (cf. Figure 1)—but also does not allow to examine interactions of perfectionism dimensions, which proved crucial in the present study. Consequently, the significant interaction of self-oriented and socially prescribed perfectionism we found demonstrates the importance of the 2 × 2 model as a theoretical and analytic

framework and the progress the model presents over the tripartite model [31].

The present study has a number of limitations. First, the study employed a cross-sectional design. Hence the results of the regression analyses showing that self-oriented and socially prescribed perfectionism predicted eating disorder symptoms cannot be interpreted in a causal or temporal fashion, but only in a statistical sense (i.e., predictor variables predicting criterion variables in regression analyses; [32]). Future studies may profit from employing longitudinal designs to examine whether the relationships the present study found replicate longitudinally. Second, the percentage of variance in eating disorder symptoms that the interaction of self-oriented perfectionism and socially prescribed perfectionism explained was rather small (less than 1%). However, note that the 2 × 2 model of perfectionism does not require a significant interaction, but also applies when the interaction is nonsignificant [11]. Third, the study investigated a convenience sample from the nonclinical population. Future studies need to examine if the present findings generalize to clinical samples of participants diagnosed with an eating disorder. Finally, the study used the HF-MPS [9] to measure perfectionism differentiating self-oriented perfectionism and socially prescribed perfectionism, and the DEQ [23] to measure eating disorder symptoms. Future studies should investigate if the findings replicate when other measures are used to examine the 2 × 2 model of perfectionism and eating disorder symptoms.

Notwithstanding these limitations, the present study's findings make a contribution to the research literature on perfectionism and eating disorders because they are the first to demonstrate the importance of taking interactions of different forms, dimensions, and aspects of perfectionism into account when examining how perfectionism as a personality disposition can help explain individual differences in disordered eating. The findings also provide suggestions for increasing treatment efficacy. A module addressing perfectionism, for instance, is included in Fairburn's enhanced CBT program for eating disorders [33]. The module, however, considers perfectionism a one-dimensional construct. In contrast, our findings suggest that—when aiming to reduce eating disorder symptoms for which perfectionism is a contributing factor—it is important to treat perfectionism as multidimensional and address not only personal aspects of perfectionism, but also interpersonal and social aspects [34].

Compliance with Ethical Standards

Conflict of Interest: The authors declare that they have no conflict of interest.

Ethical Approval: All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed consent: Informed consent was obtained from all participants included in the study.

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Table 1

Bivariate Correlations and Descriptive Statistics

Variable	1	2	3	4	5	6
Perfectionism						
1. Self-oriented perfectionism						
2. Socially prescribed perfectionism	.44***					
Control variables						
3. BMI	.01	.07				
4. Gender (female)	–.08	–.06	–.27***			
5. Age	–.02	.14***	.25***	–.20***		
6. Eating disorder symptoms	.19***	.27***	.17***	.27***	–.17***	
M	61.75	46.72	22.12	n/a	26.94	22.01
SD	17.01	13.33	3.34	n/a	8.83	18.57

Note. $N = 629$. BMI = body mass index. Gender (female) was coded (1 = female, 0 = male). n/a = not applicable.

***$p < .001$.

Table 2

Self-Oriented and Socially Prescribed Perfectionism Predicting Eating Disorder Symptoms

	$\triangle R^2$	*F*	*B*	*SE*	95% CI
Step1: Control variables	.163***	40.60***			
BMI			1.67***	0.22	1.24; 2.091
Gender (female)			6.64***	0.82	5.30; 8.25
Age			–0.37***	0.08	–0.53; –0.22
Step 2: Perfectionism, main effects	.095***	43.24***			
Self-oriented Perfectionism (SOP)			0.11**	0.04	0.03; 0.19
Socially Prescribed Perfectionism (SPP)			0.35***	0.05	0.24; 0.46
Step 3: Perfectionism, interaction effect	.008**	37.52***			
SOP × SPP			0.01**	< 0.01	0.002; 0.01

N = 629. BMI = body mass index. Gender (female) was coded (1 female, 0 = male). *F* = *F* value of the total model; *B* = unstandardized regression weight; *SE* = standard error of *B*; 95% CI = 95% confidence interval of *B*.

***p* < .01, ****p* < .001.

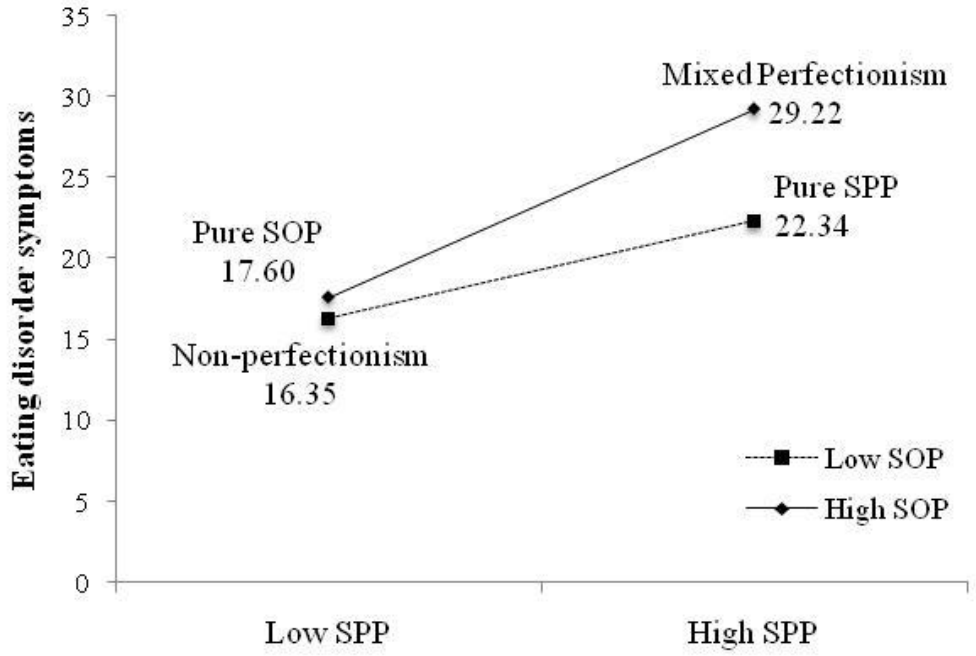

Fig. 1 Self-oriented perfectionism (SOP) × socially prescribed perfectionism (SPP) interaction on eating disorder symptoms and predicted means for the four within-person combinations of perfectionism supporting Hypotheses H1C, H2, and H4.