Positive perfectionism, negative perfectionism, and emotional eating: The mediating role of stress

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A B S T R A C T

The current study examines the different impacts of positive perfectionism and negative perfectionism on individuals’ emotional eating, as well as stress as the proposed underlying mediator that explains the abovementioned relationships. Overall, 386 adults in China reported their levels of positive perfectionism, negative perfectionism, perceived stress, and emotional eating behaviors. Results demonstrate that positive perfectionism is negatively associated with emotional eating, while negative perfectionism is positively associated with emotional eating. In addition, stress mediates the relationship between perfectionism and emotional eating. Specifically, positive perfectionism is indirectly related to emotional eating through the mediation of stress, whereas negative perfectionism is related to emotional eating directly and indirectly through the mediation of stress. Findings of the current study indicate that practitioners working with individuals who suffer from emotional eating problems should focus on ways to reduce negative perfectionism while finding approaches that enhance positive perfectionism. With this approach, individuals would experience less stress and, therefore, would be less likely to be involved in emotional eating.

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1. Introduction

Perfectionism is a personality style characterized by striving for excellence and setting extremely high standards of performance, accompanied by concern over faults (Hewitt & Flett, 1991; Terry-Short, Owens, Slade, & Dewey, 1995). Previous research has provided consistent evidence that perfectionism is connected to eating problems (Wade, O'Shea, & Shafran, 2015). For instance, perfectionists are more likely to develop anorexia, binge eating, overeating, etc. (Bardone, Vohs, Abramson, Heatherton, & Joiner, 2000; Machado, Gonçalves, Martins, Hoek, & Machado, 2014). However, studies have found different patterns of perfectionism (Terry-Short et al., 1995). That is, perfectionism is not always detrimental. It also has beneficial aspects. Nevertheless, the roles that different aspects of perfectionism play in eating problems are still underexplored. Moreover, the underlying mechanism that mediates the above associations should also be investigated.

1.1. Perfectionism and emotional eating

Perfectionism has long been considered a pathology-causing personality trait (Frost, Marten, Lahart, & Rosenblate, 1990; Hewitt & Flett, 1991). Existing research has demonstrated that perfectionism is a risk factor for eating disorders (Bardone-Cone et al., 2007; Egan, Wade, & Shafran, 2011; Wade et al., 2015). Although most prior studies assume that perfectionism is a negative trait (Hewitt & Flett, 1991; Terry-Short et al., 1995), recent studies have found that perfectionism can be either negative or positive. Derived from Hamachek’s (1978) model of normal and neurotic perfectionism, a dual process model—“positive perfectionism” and “negative perfectionism”—was developed (Slade & Owens, 1998; Terry-Short et al., 1995). In the dual-process model, positive perfectionism is described as perfectionistic behavior driven by the desire to achieve favorable outcomes, whereas negative perfectionism is defined as perfectionistic behavior driven by the goal to prevent failures. The dual-process model has provided a tool to better understand the impacts of perfectionism on people’s lives. Recent studies have reinforced the discrepancy between positive and negative perfectionism (Chan, 2007; Choo & Chan, 2013). With respect to eating, Choo and Chan (2013) suggested that positive perfectionism and negative perfectionism had different influences on eating problems. Specifically, positive perfectionistic tendencies predicted lower total eating disorder index scores, while negative perfectionism...
was positively correlated with eating disorder index scores (Choo & Chan, 2013). Thus, we conjecture that positive perfectionism is negatively related to emotional eating, whereas negative perfectionism is positively related to emotional eating.

1.2. Perfectionism and stress

Positive perfectionists have superior adaptive skills. If they fail to achieve high standards, they might change their goals or work harder to cope with failures (Haase, Prapavessis, & Owens, 2002; Hamachek, 1978). Moreover, they are more likely to have high self-esteem and, therefore, are less dissatisfied with themselves (Stoeber & Otto, 2006). Previous research has shown that positive perfectionism is negatively correlated with emotions like shame and anxiety, while negative perfectionism is positively associated with those emotions (Fedewa, Burns, & Gomez, 2005; Pirbagliou et al., 2013). Thus, we propose that positive perfectionism is negatively related to stress.

In contrast, numerous studies have shown that negative perfectionism often has harmful effects on people’s daily lives. Individuals with high negative perfectionism set unrealistically high standards and strive for impractically high goals, which often end in failure (Burns, Dittmann, Nguyen, & Mitchelson, 2000; Hamachek, 1978). That is, negative perfectionism often leads to negative affect, anxiety, depression, and less satisfaction with life. Therefore, we propose that negative perfectionism is positively related to stress.

1.3. Stress and emotional eating

Emotional eating is broadly defined as the propensity for eating in response to negative emotions (Hawks, Goudy, & Cast, 2003). Stress is widely believed to lead to craving food or overeating (Greeno & Wing, 1994; Royal & Kurtz, 2010). For instance, female college students considered stress as the primary trigger for their emotional eating behavior. When they became stressed, they ate more (Bennett, Greene, & Schwartz-Barcott, 2013). A recent study found that both males and females who experienced high stress levels were more likely to suffer from emotional eating (Tan & Chow, 2014). People might cope with stress through eating because eating can distract them from thinking about things that bother them, or eating something that tastes good per se is pleasant (Van Blyderveen, Lafrance, Emond, Kosmerly, O’Connor, & Chang, 2016; Zellner et al., 2006). Therefore, we propose that stress is positively associated with emotional eating.

1.4. The mediating role of stress

As noted earlier, existing research has provided some evidence about the relationship between perfectionism and eating behaviors. However, the underlying mechanism that mediates the relationship has yet to be examined and the role of stress has been overlooked. Prior research speculated that negative perfectionism is particularly related to eating problems because negative perfectionists are concerned with the social evaluation of their appearances (Bardone-Cone et al., 2007; Wade et al., 2015). To these individuals, minor flaws in body image may bring about negative emotions. Consequently, they deal with these feelings through eating.

Nevertheless, we propose that stress mediates the relationship between perfectionism and emotional eating. As mentioned earlier, negative perfectionists often set high standards that are not easy to achieve, so they are more likely to experience stress, which may lead to emotional eating. The high goals that negative perfectionists set may not only be related to their appearance, they are probably also related to other domains of their lives (e.g., learning or sports; Gregersen & Horwitz, 2002). In contrast, positive perfectionists have better adaptive skills, which signifies that they might change their goals or work harder to cope with failures. Moreover, studies have found that stress mediates the relationship between maladaptive perfectionism and psychological functioning (Chang, Watkins, & Banks, 2004), and the relationship between perfectionism and psychological well-being (Chang, 2006). That is, perfectionism has a negative influence on individuals’ lives, and stress mediates this relationship. Taking the above evidence together, we hypothesize that stress may also play a mediating role in the relationship between perfectionism and emotional eating.

1.5. Current study and hypotheses

In this article, we propose a theoretical framework to examine how positive perfectionism and negative perfectionism influence individuals’ emotional eating behaviors. Specifically, we argue that positive perfectionism could ease stress levels, whereas negative perfectionism would raise stress levels, which in turn would lead to emotional eating. Given the evidence discussed in the preceding paragraphs, we propose that (1) positive perfectionism is negatively related to stress; (2) negative perfectionism is positively related to stress; (3) stress is positively related to emotional eating; and (4) stress mediates the relationships between both (a) positive perfectionism and emotional eating and (b) negative perfectionism and emotional eating.

2. Method

2.1. Participants

We recruited a group of respondents from a professional website offering paid online tasks (http://www.sojump.com). Three hundred and eighty-six participants completed the online survey. Of these participants, 215 (55.70%) were female and 171 (44.30%) were male. Participants ranged in age from 18 to 60 years. Most participants (83.68%) held a bachelor’s degree or higher.

2.2. Measures

2.2.1. Perfectionism

We adapted the self-report 40-item Positive and Negative Perfectionism Scale (PANPS; (Terry-Short et al., 1995)) to assess the levels of positive and negative perfectionism (20 items each). The PANPS includes items such as, “When I am competing against others, I am motivated by wanting to be the best” and “If I make a mistake I feel that the whole thing is ruined.” Participants rated the items on a Likert-type scale, ranging from 1 (strongly disagree) to 5 (strongly agree). The Cronbach’s alpha coefficients for positive perfectionism and negative perfectionism were 0.91 and 0.89, respectively.

2.2.2. Stress

We measured participants’ stress levels using the 14-item Global Measure of Perceived Stress Scale (Cohen, Kamarck, & Mermelstein, 1983). The scale measures how often participants found their lives to be unpredictable, overloaded, and uncontrollable during the last month. The scale consists of items such as, “In the last month, how often have you felt nervous and stressed?” and “In the last month, how often have you been able to control the way you spend your time?” Participants rated each item on a scale ranging from 0 (never) to 4 (very often). Cronbach’s alpha for this measure was 0.86.

2.2.3. Emotional eating

We used the 13-item emotional eating subscale of the Dutch Eating Behavior Questionnaire (DEBQ; Van Strien, Frijters, Berghers, & Defares, 1986) to measure participants’ emotional eating behaviors. The scale includes items such as, “Do you have a desire to eat when someone lets you down?” and “Do you have a desire to eat when you are disappointed?” Participants rated each item on a scale ranging from 1 (never) to 5 (very often). Cronbach’s alpha for this measure was 0.93. All the scales used in this study were originally developed in English. The items for the Perceived Stress Scale and the emotional eating scale were translated and back-translated into Chinese.
subscales were translated following the procedure recommended by Brislin, Lonner, and Thorndike (1973). Two bilingual researchers independently translated these scales into Chinese and the translated version of each scale was back-translated to English by another bilingual researcher. We used the Chinese version of the PANPS (Choo & Chan, 2013).

2.3. Procedures

To control for order effects, we randomized the order of the three scales in the questionnaire. Prior to completing the questionnaire, each individual was informed of the broad nature of the research. To encourage participants to answer each question as honestly as possible, we informed them that their responses were anonymous and there were no right or wrong answers. Having read the study information, participants then indicated their agreement with the study protocol and procedure by signing their consent online.

3. Results

3.1. Correlations among study variables

Table 1 describes the correlations among positive perfectionism, negative perfectionism, stress, and emotional eating. Positive perfectionism was negatively correlated with stress ($r = -0.46, p < 0.01$) and emotional eating ($r = -0.18, p < 0.01$). In contrast, negative perfectionism was positively correlated with stress ($r = 0.50, p < 0.01$) and emotional eating ($r = 0.44, p < 0.01$). The correlation between positive perfectionism and negative perfectionism was not significant ($r = -0.03, n.s.$). In addition, stress was positively correlated with emotional eating ($r = 0.40, p < 0.01$).

3.2. Measurement model

Before testing our hypotheses, we used a series of confirmatory factor analyses (CFAs) to assess the properties of the 4-factor measurement model (positive perfectionism, negative perfectionism, stress, and emotional eating) using Amos 22 software. Since the positive perfectionism, negative perfectionism, stress, and emotional eating scales comprised too many items, we pared these items to form four indicators for each construct (Little, Cunningham, Shahar, & Widaman, 2002).

The proposed four-factor baseline model provided best fit indices ($\chi^2 = 287.37, df = 98; CFI = 0.96; TLI = 0.95; RMSEA = 0.07$) (Browne & Cudeck, 1992). To examine whether the four constructs could be distinguished, we combined the two latent variables with the highest correlation coefficient (in this case, negative perfectionism and stress) into one factor. The resulting indices ($\chi^2 = 826.74, df = 101; CFI = 0.84; TLI = 0.81; RMSEA = 0.14$) were much worse than the baseline model, and further combination would yield even poorer fit indices. Therefore, these results indicated adequate discriminant validity for the scales used in the present study.

3.3. Structural model

To examine the hypotheses, we compared a series of structural models. The baseline model, Model 1, is a partial mediation model including paths from positive perfectionism and negative perfectionism to stress, path from stress to emotional eating, and path from positive perfectionism and negative perfectionism to emotional eating. In Model 2, we omitted the direct path from positive perfectionism to emotional eating. In Model 3, we omitted the direct path from negative perfectionism to emotional eating. Model 4 is a full mediation model with the omission of two direct paths from positive perfectionism and negative perfectionism to emotional eating. Model 5, stress only mediates the effect of negative perfectionism on emotional eating. In Model 6, stress only mediates the effect of positive perfectionism on emotional eating. In Model 7, we tested a model in which positive perfectionism and negative perfectionism directly influence emotional eating. The results are presented in Table 2.

The results show that the baseline model (Model 1) provides the best fit for the data ($\chi^2 = 287.37, df = 98$). However, in Model 1, the path from positive perfectionism to emotional eating was not significant ($t = -1.38, n.s.$). Moreover, when we removed the direct path from positive perfectionism to emotional eating, $\chi^2$ increased ($\chi^2 = 289.25, df = 99$). However, the change was not significant ($\Delta \chi^2 = 1.88, n.s.$). Thus, we selected Model 2, in which stress fully mediated the effect of positive perfectionism on emotional eating and partially mediated the effect of negative perfectionism on emotional eating.

Fig. 1 presents the path coefficients of our final selected model. The paths from both positive perfectionism to stress ($\beta = -0.51, p < 0.01$) and negative perfectionism to stress ($\beta = 0.56, p < 0.01$) were significant, supporting Hypotheses 1 and 2, respectively. The path from stress to emotional eating was significant ($\beta = 0.27, p < 0.01$), supporting Hypothesis 3. Finally, the mediating effects of stress proposed in Hypothesis 4 were supported. The direct path from negative perfectionism to emotional eating was also significant ($\beta = 0.31, p < 0.01$). Therefore, these results indicate that stress partially mediated the path from negative perfectionism to emotional eating. Path coefficients for each proposed model can be found in the Supplemental material.

To further verify Hypothesis 4, we adopted a bootstrapping approach to evaluate the significance of the mediating role of stress in our hypothesized model (Mackinnon, Lockwood, & Williams, 2004). Table 3 shows the direct effects, indirect effects, and their 95% confidence intervals. As demonstrated in Table 3, the direct effects of positive perfectionism and negative perfectionism on stress, stress on emotional eating, and negative perfectionism on emotional eating were all significant. The indirect effects of positive perfectionism and negative perfectionism on emotional eating through stress were also significant.

4. Discussion

In this article, we examined the different influences of positive and negative perfectionism on emotional eating and the mediating role of...
stress between perfectionism and emotional eating. First, we found that positive perfectionism and negative perfectionism have different impacts on stress and emotional eating. Correlational analyses indicated that positive perfectionism was negatively correlated with stress and emotional eating, whereas negative perfectionism was positively correlated with stress and emotional eating. Results also showed that individuals who experienced more stress were more likely to engage in emotional eating. Furthermore, path analysis supported our hypotheses that both positive perfectionism and negative perfectionism were associated with stress, which in turn aggravated emotional eating behavior. Most importantly, path analysis demonstrated that stress mediated the relationship between both (a) positive perfectionism and emotional eating, and (b) negative perfectionism and emotional eating.

This article contributes to the literature in several ways. First, this study extends the understanding of the effect of perfectionism on eating behaviors. Prior research has mainly focused on the impact of maladaptive perfectionism on eating behavior. Whether positive and negative perfectionism play different roles when influencing emotional eating had not yet been fully examined. The current study filled this gap by indicating that positive perfectionists are less vulnerable to emotional eating, whereas negative perfectionists are more likely to be involved in emotional eating. In addition, the mediating effect of stress should be noted. Prior research speculated that perfectionists could not tolerate the imperfections or shortcomings in their body appearance. Tiny flaws in their body appearance may remind them of their failure to achieve perfection, which in turn, results in disordered eating (Bardone-Cone et al., 2007; Wade et al., 2015). However, our results show that stress mediates the effects of positive perfectionism, negative perfectionism, and emotional eating. This finding implies that perfectionism is correlated with emotional eating because it is not only related to satisfaction with body appearance, but it also influences individuals’ overall stress levels. Finally, this article contributes to the literature on eating behaviors by examining the determinants and process for alleviating emotional eating. A high level of emotional eating may lead to ineffective weight control (Blair, Lewis, & Booth, 1990), binge eating (Waters, Hill, & Waller, 2001), and other kinds of health problems. However, there is a dearth of research investigating the different effects of positive and negative perfectionism on emotional eating and how they impact emotional eating. Therefore, the current research also provides useful insight into exploring how to reduce individuals’ stress and emotional eating levels.

Our findings also provide implications for the prevention and treatment of emotional eating problems. Emotional eating is of great importance to individuals’ psychological and physical well-being. Research has shown that emotional eating may lead to health problems such as overweight status (Bennett et al., 2013; Geliebter & Aversa, 2003; Koenders & van Strien, 2011) and eating disorders (Allen, Byrne, La Puma, McLean, & Davis, 2008; Masheb & Grilo, 2006). Moreover, previous research found that emotional eating could also reduce psychological well-being (Hawks et al., 2003; Masheb & Grilo, 2006).

Our study supported the duality of perfectionism. Negative perfectionism intensified stress levels, which often resulted in emotional eating. On the other hand, positive perfectionism predicted lower stress levels. This duality indicates that practitioners who work with individuals beset by emotional eating problems should focus on ways to reduce negative perfectionism while finding approaches that enhance positive perfectionism. For instance, practitioners can help individuals to set realistic goals that are more likely to be achieved. Moreover, practitioners

Table 2
Comparisons of structural equation models.

<table>
<thead>
<tr>
<th>Model specifications</th>
<th>$\chi^2$</th>
<th>df</th>
<th>$\Delta \chi^2$</th>
<th>CFI</th>
<th>TLI</th>
<th>RMSEA</th>
</tr>
</thead>
<tbody>
<tr>
<td>1: NP + PP $\rightarrow$ EE &amp; NP + PP $\rightarrow$ EE &amp; NP $\rightarrow$ EE</td>
<td>287.37</td>
<td>98</td>
<td>-</td>
<td>0.96</td>
<td>0.95</td>
<td>0.07</td>
</tr>
<tr>
<td>2: NP + PP $\rightarrow$ EE &amp; NP $\rightarrow$ EE</td>
<td>289.25</td>
<td>99</td>
<td>1.88</td>
<td>0.96</td>
<td>0.95</td>
<td>0.07</td>
</tr>
<tr>
<td>3: NP + PP $\rightarrow$ EE &amp; PP $\rightarrow$ EE</td>
<td>311.51</td>
<td>99</td>
<td>24.14**</td>
<td>0.95</td>
<td>0.94</td>
<td>0.08</td>
</tr>
<tr>
<td>4: NP + PP $\rightarrow$ EE</td>
<td>313.22</td>
<td>100</td>
<td>25.85**</td>
<td>0.95</td>
<td>0.94</td>
<td>0.07</td>
</tr>
<tr>
<td>5: NP $\rightarrow$ EE &amp; PP $\rightarrow$ EE</td>
<td>432.79</td>
<td>100</td>
<td>145.42**</td>
<td>0.93</td>
<td>0.91</td>
<td>0.09</td>
</tr>
<tr>
<td>6: PP $\rightarrow$ EE &amp; NP $\rightarrow$ EE</td>
<td>428.66</td>
<td>100</td>
<td>141.29**</td>
<td>0.93</td>
<td>0.91</td>
<td>0.09</td>
</tr>
<tr>
<td>7: NP + PP $\rightarrow$ EE</td>
<td>527.77</td>
<td>101</td>
<td>240.40**</td>
<td>0.90</td>
<td>0.89</td>
<td>0.11</td>
</tr>
</tbody>
</table>

Notes: $N = 386$. $\Delta \chi^2$ is the change in $\chi^2$ compared with the baseline model.

a Baseline model.

b NP = negative perfectionism; PP = positive perfectionism; EE = emotional eating.

** $p < 0.01$.

Table 3
Direct and indirect effects and 95% confidence intervals.

<table>
<thead>
<tr>
<th>Effect</th>
<th>Estimated effect</th>
<th>95% CI$^*$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct effects</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Positive perfectionism $\rightarrow$ stress</td>
<td>$-0.51^{**}$</td>
<td>[-0.59, -0.41]</td>
</tr>
<tr>
<td>Negative perfectionism $\rightarrow$ stress</td>
<td>$0.56^{**}$</td>
<td>[0.48, 0.64]</td>
</tr>
<tr>
<td>Stress $\rightarrow$ emotional eating</td>
<td>$0.27^{**}$</td>
<td>[0.15, 0.39]</td>
</tr>
<tr>
<td>Negative perfectionism $\rightarrow$ emotional eating</td>
<td>$0.31^{**}$</td>
<td>[0.18, 0.44]</td>
</tr>
<tr>
<td>Indirect effects</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Positive perfectionism $\rightarrow$ stress $\rightarrow$ emotional eating</td>
<td>$-0.14^{**}$</td>
<td>[-0.21, -0.07]</td>
</tr>
<tr>
<td>Negative perfectionism $\rightarrow$ stress $\rightarrow$ emotional eating</td>
<td>$0.15^{**}$</td>
<td>[0.09, 0.23]</td>
</tr>
</tbody>
</table>

Notes: $N = 386$.

$^*$ CI = confidence interval.

** $p < 0.01$.

Fig. 1. Path coefficients of the hypothesized model.
could also enhance individuals’ self-esteem and help them develop better adaptive skills. With these qualities, individuals would cope with failures more effectively and experience less stress. As stress levels decrease, people are less likely to engage in emotional eating behaviors.

Several limitations of the current study should be noted. First, the cross-sectional nature of the present study design did not allow us to explore causality among the variables. Second, the current study relied solely on self-reported behavior, but did not measure actual behavior. Additionally, the partial mediation effect of stress on perfectionism and emotional eating suggests that other variables also influence this effect. The validity of the Chinese versions of the scales requires further examination. Finally, the data in the current study was collected from a sample in China, which limits the generalizability of the results.

Future research may confirm causal relationships between perfectionism, stress, and emotional eating with experimental or longitudinal data. Additional empirical research should examine whether other factors influence the relationships found in the current study. Moreover, the validity of the Chinese versions of the scales used in this study is subject to further examination. Finally, it would be useful if more studies could replicate the results from the current study in other cultures to strengthen the generalizability of the pattern found in this article.

In conclusion, we explored how positive perfectionism and negative perfectionism influence individuals’ emotional eating behaviors. Specifically, the results showed that stress mediated the relationship between perfectionism and emotional eating. Specifically, positive perfectionism was related to emotional eating indirectly through the mediation of stress, whereas negative perfectionism was related to emotional eating directly and indirectly through the mediation of stress. The findings extend the understanding of the roles that positive and negative perfectionism play in eating behaviors and provide valuable insights into exploring how to decrease levels of emotional eating.

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Contributors
Both authors contributed to the design of the study. The first author conducted the analyses and wrote the first draft of the manuscript. Both authors have approved the final manuscript.

Conflict of interest
The authors declare that they have no conflicts of interest.

Appendix A. Supplementary data
Supplementary data to this article can be found online at http://dx.doi.org/10.1016/j.eatbeh.2016.12.012.

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