EXAMINING INTERACTIONS OF PERFECTIONISM AND DISPOSITIONAL MINDFULNESS ON PERCEIVED STRESS

by

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ABSTRACT

KIMBERLY PAPAY. Examining interactions of perfectionism and dispositional mindfulness on perceived stress. (Under the direction of DR. CHARLIE L. REEVE)

The main purpose of the study was to examine if perfectionism (both evaluative concerns perfectionism (ECP) and personal strivings perfectionism (PSP)) and dispositional mindfulness interact to predict perceived stress. Regression analyses indicated that ECP is a strong predictor of perceived stress and that PSP appears to serve as a beneficial and stress-protective factor against stress, though somewhat weakly. Regression analyses also indicated that dispositional mindfulness is a strong protective factor against perceived stress. Results of a 2-way interaction between ECP and PSP indicate that these variables did interact to significantly predict perceived stress above and beyond the main effects of all predictors. However, simple slopes plots revealed that this interaction functions in the opposite direction than hypothesized: as PSP increases, the positive relationship between ECP and perceived stress gets stronger. Specifically, the plot of these slopes demonstrated that PSP only serves as a protective factor for individuals low in ECP; if an individual is high in ECP, PSP has no effect on perceived stress. Therefore, ECP seems to be the driving factor in the experience of perfectionism-related stress. Dispositional mindfulness did not interact with either perfectionism factor to predict perceived stress. Limitations and implications are discussed.

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INTRODUCTION

Whether perfectionism should be regarded as a character strength or weakness has been debated for centuries. For example, Confucius once said, "The perfecting of one's self is the fundamental base of all progress and all moral development." On the other hand, Rowan Atkinson, the English actor and comedian well-known for his role as Mr. Bean, declared that, "I have to say that I've always believed perfectionism is more of a disease than a quality." Similarly, the emergence of popular books such as *When Perfect Isn't Good Enough: Strategies for Coping with Perfectionism* (Antony & Swinson, 2009), *The Gifts of Imperfection: Let Go of Who You Think You're Supposed to Be and Embrace Who You Are* (Brown, 2010), and *Present Perfect: A Mindfulness Approach to Letting Go of Perfectionism and the Need for Control* (Somov, 2010) illustrate the public's growing interest in the potential detrimental effects of perfectionism and the desire to find ways to cope with them.

Despite the ongoing debate regarding the positive versus negative aspects of perfectionism, a variety of research has indicated that, overall, perfectionism is a stable personality characteristic that influences the presence and experience of stress (Hewitt & Flett, 2002). This relationship is especially concerning from a health outcomes perspective, as stress has long been known to negatively influence physiological health, mental health, health behaviors, and overall wellbeing (see Appendix for a review of current theoretical understandings of stress).

Importantly, associations between perfectionistic characteristics and stress have been demonstrated in a variety of populations and settings. For example, perfectionism has been linked to both concurrent levels of perceived stress (Rice & Van Arsdale, 2010)

and prospective levels of perceived stress (Rice, Leever, Christopher, & Porter, 2006) among college students, as well as stress in the workplace (Childs & Stoeber, 2012). Some theories suggest that underlying mechanisms for the link between perfectionism and stress may lie in rumination and worry (Short & Mazmanian, 2013) as well as self-criticism (James, Verplanken, & Rimes, 2015).

Perfectionism: An Evolving Construct

In general, perfectionism as a whole is considered "the tendency to continuously strive towards improvement and high standards" (Short & Mazmanian, 2013). However, most research indicates that this construct consists of differential factors that have adaptive and maladaptive features, which has led to the conceptualization and measurement of perfectionism as a two-factor personality trait (Flett & Hewitt, 2006; Frost et al., 1993; Gaudreau & Thompson, 2010). Although there appears to be general agreement about this two factor structure of perfectionism, researchers have proposed different terms for them. For example, some researchers proposed the terms "unhealthy" versus "healthy" (Stoeber, Harris, & Moon, 2007), "negative" versus "positive" (Terry-Short, Owens, Slade, & Dewey, 1995), and "maladaptive" versus "adaptive" (Rice & Preusser, 2002). However, some researchers avoided these subjective and value-laden labels and instead proposed more specific categorizations of the dual aspects of perfectionism. For example, Hewett and Flett (Hewitt & Flett, 1993, 2002; Hewitt & Flett, 1991a, 1991b; Hewitt, Flett, Turnbull-Donovan, & Mikail, 1991) explored the specific aspects of each factor of perfectionism and found that one factor tends to be characterized by the belief that others hold excessively high standards and expectations, and that the only way to obtain acceptance is to meet those expectations (i.e., this domain

appears to be externally focused), whereas the second factor is characterized by an individual valuing perfection intrinsically for him- or herself (i.e., this domain appears to be internally focused). As a result of this externally versus internally focused delineation, Hewett and Flett used the terms "socially prescribed perfectionism" (SPP) versus "self-oriented perfectionism" (SOP).

However, other researchers (Frost, Marten, Lahart, & Rosenblate, 1990a; Stoeber & Otto, 2006) have preferred to use the terms "evaluative concerns perfectionism" (ECP) and "personal strivings perfectionism" (PSP; for a review see Stoeber & Otto, 2006). In this conceptualization, ECP reflects a fear of making mistakes, unrealistic parental expectations and criticism, doubts about one's actions (Frost, Marten, Lahart, & Rosenblate, 1990b), as well as the fear of being unable to meet extremely high standards perceived to be set by others (Hewitt & Flett, 1991). PSP, on the other hand, is characterized by the striving for and the setting of excessively high standards for oneself and others with a particular focus on flaws (Frost et al., 1993). Consistent with this theorizing, research has demonstrated that ECP has been positively associated with perceived stress, negative affect, and suicide ideation (Chang, Watkins, & Banks, 2004) and negatively associated with positive affect and life satisfaction (Chang et al., 2004), as well as self-esteem (Stumpf & Parker, 2000). On the other hand, research shows that PSP is positively correlated with positive affect and life satisfaction (Chang et al., 2004) as well as beneficial aspects of personality such as conscientiousness and psychological endurance (Stumpf & Parker, 2000), while it is negatively correlated with suicide ideation (Chang et al., 2004).

Regardless of the specific terms used to differentiate the two domains of perfectionism, the majority of research to date has utilized a group-based approach that clusters individuals into distinct categories by artificially dichotomizing the continuum of this construct (Douilliez & Lefèvre, 2011; Gaudreau, 2012, 2015; Gaudreau & Thompson, 2010; Gaudreau & Verner-Filion, 2012; Parker, 1997; Rice & Ashby, 2007; Stoeber & Otto, 2006). This group-based approach presents some methodological strengths over measuring and analyzing each domain of perfectionism individually. First, it incorporates the conceptualization of two independent factors of perfectionism; that is, ECP is not simply the opposite end of the continuum from PSP but, rather, both are continuous, separate constructs. Second, it highlights the notion that the specific interaction of these factors may be more important than a person's status on either factor independently. Third, it permits an interesting analysis of perfectionistic group prototypes that may allow for generalized characteristic predictions. For example, research has indicated that individuals high in ECP and low in PSP (termed the "pure ECP" group) exhibit very different characteristics than individuals low in ECP and high in PSP (termed the "pure PSP" group) (Gaudreau & Thompson, 2010). Additionally, research has indicated that each of these groups significantly differ from those low in both ECP and PSP (the "non-perfectionist" group) and from those high in both ECP and PSP (the "mixed perfectionism" group) (Gaudreau & Thompson, 2010).

While this group categorization does allow for prototypical group comparisons, some significant problems arise with this methodology. First, this methodology incorporates a technique in which perfectionism variables, which are both theoretically conceptualized and methodologically measured as continuous variables, are artificially

dichotomized. Although this technique can be useful in settings where meaningful scale cutoff values exist (e.g., established national normative values or meaningful clinical cutoff values), it essentially eliminates the majority of meaningful variance and lessens the power of the study (Royston, Altman, & Sauerbrei, 2006). Second, arbitrary cutoff values are used in order to carryout this group delineation process (i.e., a researcher must subjectively decide on a cutoff value between "low" and "high" levels of a domain). As no normative or clinically-based cutoff values for this construct exist (or, perhaps, are even ecologically necessary), the use of subjective cutoff values can vary greatly between samples, which can result in conflicting or null findings as well as the inability to compare outcomes across studies (Royston et al., 2006).

Therefore, in order to address these methodological issues, the current study will examine the two factors of perfectionism as continuous variables without artificially dichotomizing them. It will utilize the two independent factor conceptualization of this construct that has been theoretically and empirically supported by previous research. Specifically, the current study will utilize the previously mentioned delineation of perfectionism into evaluative concerns perfectionism (ECP) and personal standards perfectionism (PSP) factors.

Dispositional Mindfulness

As previously mentioned, the link between perfectionism and stress has been demonstrated in a multitude of research studies, with some research positing that underlying mechanisms lie in rumination and worry (Short & Mazmanian, 2013) and self-criticism (James et al., 2015). Specifically, it is thought that those with specific perfectionist tendencies are more likely to worry and ruminate which causes increased

psychological distress (O'Connor, O'Connor, & Marshall, 2007). Recently, some personality traits have been shown to act as potential buffers against stress via these factors. One such trait is that of dispositional mindfulness.

Definitions of mindfulness include "the awareness that emerges through paying attention on purpose, in the present moment, and nonjudgmentally to the unfolding of experience moment to moment" (Kabat-Zinn, 2003, p. 145), "bringing one's complete attention to the present experience on a moment-to-moment basis," (Marlatt & Kristeller, 1999, p. 68), and "the nonjudgmental observation of the ongoing stream of internal and external stimuli as they arrive" (Baer, 2006, p. 125). While the specific operational definitions of mindfulness differ across published research and mainstream media, most definitions include two fundamental factors: awareness and a purposeful lack of judgment.

Although a great deal of research has focused on the use of mindfulness meditation interventions, recent research has indicated that mindfulness exists as both a trainable skill as well as an innate personality characteristic (Barnhofer, Duggan, & Griffith, 2011; Brown, Ryan, Loverich, Biegel, & West, 2011). The latter conceptualization, termed "dispositional mindfulness," is an individual's natural ability to maintain awareness and non-judgmental acceptance in everyday experiences (Harrington, Loffredo, & Perz, 2014). There is currently much debate as to the multifaceted nature of dispositional mindfulness. For example, Brown and Ryan (2003) argue that mindfulness is a unidimensional construct, Bishop et al (2004) utilize a two-factor conceptualization consisting of an attention factor and an emotion regulation factor, and Baer and colleagues (2008) conceptualize dispositional mindfulness as consisting of five sub-

skills: observing internal and external stimuli, describing and labeling those stimuli, acting with awareness, being non-judging of experiences, and being non-reactive to inner experiences. A variety of individual dispositional mindfulness self-report scales have been developed, published, and utilized in psychological research (e.g., the Cognitive and Affective Mindfulness Scale Revised (CAMS-R; Feldman, Hayes, Kumar, Greeson, & Laurenceau, 2007), the Five Factors Mindfulness Questionnaire (FFMQ; Baer et al., 2008), the Freiberg Mindfulness Inventory (FMI; Walach, Buchheld, Buttenmüller, Kleinknecht, & Schmidt, 2006), the Kentucky Inventory of Mindfulness Skills (KIMS; Baer, Smith, & Allen, 2004), the Mindfulness Attention Awarenesss Scale (MAAS; Brown & Ryan, 2003), etc.), though there is little agreement as to which scale best reflects the construct of interest or most accurately captures the underlying theoretical and historical nature of the construct.

Despite inconsistencies in the psychometric measurement of dispositional mindfulness, research has consistently indicated that this personality characteristic is a stress-protective factor. The stress buffering hypothesis, originally proposed by Cohen and Wills (1985) posits that protective factors against stress, or stress buffers, only have an effect under conditions of high stress (i.e. that there is a protective factor X stress level interaction, as opposed to a basic main effect). This theoretical foundation has recently been incorporated into the mindfulness literature (Creswell & Lindsay, 2014) as a possible explanation for the health outcome effects of mindfulness meditation techniques. Creswell and Lindsay's mindfulness stress buffering account (2014) posits that mindfulness influences cognitive stress appraisals under high-stress conditions, and, thus, attenuates physiological stress responses.

Specifically, this theory hypothesizes that mindfulness is likely to impact physiological functioning in high-stress situations or populations, but not in low-stress ones (Creswell & Lindsay, 2014). Although this theoretical framework is relatively new, some research findings support this notion. For example, in a sample of undergraduates exposed to high-stress or low-stress laboratory manipulations, higher levels of dispositional mindfulness were associated with lower cortisol reactivity to the stressor, but only in the high-stress condition (Brown, Weinstein, & Creswell, 2012). Additionally, mindfulness training has been shown to buffer against stress appraisals (Creswell et al., 2014) and to be an effective intervention in stress-sensitive clinical populations (Kabat-Zinn, 2005).

The Current Study

Although there is a variety of research supporting individual links between perfectionism, dispositional mindfulness, and stress, no studies to date have examined all three factors simultaneously. Of particular interest are the potential interactions between various combinations of these constructs. For example, Lundh (2004) demonstrated an interaction between perfectionism and self-acceptance (an aspect of mindfulness) such that perfectionism was related to maladaptive outcomes when individuals had low levels of self-acceptance but was related to adaptive outcomes for individuals high in self-acceptance. Similarly, some research has looked at specific aspects of perfectionism that align closely with theoretical understandings of mindfulness. For example, some research (Campbell & DiPaula, 2002; Lundh, 2004) suggests that it is not necessarily the setting of high standards in perfectionism that is maladaptive, but that judging oneself and not accepting failures (key aspects of mindfulness) is what contributes to distress.

Similar results have emerged in the context of mindfulness meditation intervention studies regarding both perfectionism and mindfulness. For example, a study (Azam et al., 2015) examining the effects of mindfulness meditation training on heart rate variability (HRV, a biomarker of autonomic nervous system functioning) found that a 10-minute audio-recorded meditation session led to elevated HRV (indicating relaxation and better autonomic balance) for non-perfectionists, but that this did not occur in a perfectionist group. This suggests that while mindfulness meditation promotes relaxation and physiological changes, this may be contingent on personality factors such as perfectionism. Interestingly, HRV levels have also been implicated in stress research (McCraty & Shaffer, 2015).

In an attempt to tease out some of the underlying mechanisms between perfectionism, mindfulness, and negative affect (an aspect of psychological distress), Short and Mazmanian (2013) examined rumination and worry in the context of these three variables. They hypothesized that worry and rumination would mediate the relationship between perfectionism and negative affect for individuals who were low in dispositional mindfulness, but that this would not be the case for those high in dispositional mindfulness. In other words, they hypothesized that dispositional mindfulness would serve as a buffer, or protective factor, against this relationship. While results of the study did support these hypotheses, it is important to note that the researchers utilized a tertiary-split technique to organize participants into low versus high mindfulness groups as opposed to examining this continuous variable in a true moderating sense.

Overall, research supports the hypothesizing of associations between perfectionism, dispositional mindfulness, and stress, but no study to date has examined their interactive effects. This is a significant gap in the literature, as personality characteristics (such as ECP, PSP, and dispositional mindfulness) do not exist in isolation. Rather, all of these traits are likely to be manifested in similar situations, and can potentially interact in interesting ways.

Therefore, the primary purpose of the current study is to examine the main and interactive effects of dispositional mindfulness and perfectionism (both ECP and PSP) on perceived stress. Conceptually, both perfectionism and dispositional mindfulness should have main effects on this outcome variable. Additionally, it is hypothesized that dispositional mindfulness will moderate the relationship between ECP and perceived stress. However, given that it is known that ECP and PSP also interact (Taylor, Papay, Webb, & Reeve, 2016) it is expected that a three-way interaction is possible.

Hypothesis 1: Main effects

H1a: ECP will be positively associated with perceived stress with a moderate effect size.

H1b: PSP will not be associated with perceived stress.

H1c: Dispositional mindfulness will be negatively associated with perceived stress with a moderate effect size.

Hypothesis 2: 2-way interactions

H2a- Mindfulness will moderate the relationship between ECP and perceived stress such that as mindfulness increases, the positive relationship between ECP and perceived stress will diminish.

H2b- Mindfulness will moderate the relationship between PSP and perceived stress such that as mindfulness increases, a negative relationship between PSP and perceived stress will emerge.

H2c –PSP will moderate the relationship between ECP and perceived stress such that as PSP increases, the positive relationship between ECP and perceived stress will diminish.

Hypothesis 3: 3-way interaction

H3: A significant 3-way interaction will be found between ECP, PSP, and dispositional mindfulness on perceived stress. However, as this hypothesis is largely exploratory, specific hypotheses as to the complex nature of this interaction are not proposed.

METHOD

Participants

This study utilized data that was collected as part of a separate Institutional Review Board (IRB)-approved research project at a large southeastern university investigating self-compassion and body image discrepancies in women (thus, data on men was not available in this dataset; see Discussion for implications). A sample of 150 women between the ages of 18 and 26 were recruited via flyers, personal solicitation, and the psychology department's online subject pool for research participation. Simple convenience sampling was be used, as both the timeframe and cost-effectiveness of this method were more feasible than probability sampling (Whitley & Kite, 2013), and the constructs of interest in this experiment did not warrant specific sampling requirements (i.e., these personality characteristics should be present with adequate variation even in a simple convenience sample). Each participant had a 50% chance of winning a $5 Target gift card as well as research credit.

Measures

Perfectionism. Perfectionism was assessed with the Multidimensional Perfectionism Scale (MDPS-F; Frost et al., 1990). This scale consists of 35 items distributed among 6 subscales, rated from 1 (*Strongly Agree*) to 5 (*Strongly Disagree*). Evaluative concerns perfectionism (ECP) will be measured by averaging the Personal Standards (7 items) and Organization (6 items) subscales, whereas personal strivings perfectionism (PSP) will be measured by averaging scores on the Concern Over Mistakes (9 items), Parental Expectations (5 items), Parental Criticism (4 items), and Doubts About Actions (4 items) subscales. A previous study with a similar sample (Taylor et al.,

2016) demonstrated acceptable internal consistency for both factors (α = .86 and .91, respectively). Additionally, both ECP and PSP factors have demonstrated good convergent and divergent validity. Specifically, ECP is positively associated with depression and negative affect and is not associated with positive affect (Frost et al., 1993). Conversely, PSP is significantly related to positive affect and unrelated to depression and negative affect (Frost et al., 1993).

Dispositional mindfulness. Dispositional mindfulness was assessed with the Five Facet Mindfulness Questionnaire (FFMQ; Baer et al., 2008). The FFMQ consists of 39 items that utilize a 5-point Likert scale ranging from 1 (*never/rarely true*) to 5 (*very often/always true*). The FFMQ contains 5 subscales measuring the facets of observing, describing, acting with awareness, non-judgment, and non-reactivity. Higher scores in each subscale indicate higher dispositional levels of that facet. In the proposed study, an overall FFMQ mean score will be calculated and utilized, a method which has previously demonstrated good internal consistency (α ranging from .75 to .91; Baer, 2006).

Perceived stress. Perceived stress was assessed with the Perceived Stress Scale (PSS; Cohen, Kamarck, & Mermelstein, 1983). The PSS measures the degree to which events in one's life are perceived as stressful. The PSS consists of 14 items that utilize a 5-point Likert scale ranging from 1 (*never*) to 5 (*very often*). Higher scores indicate higher perceived stress. In the present study, a mean PSS score will be calculated and utilized, a method which has previously demonstrated good internal consistency (α = .78) (Cohen & Williamson, 1988).

Statistical Analysis

The data was analyzed using the SPSS version 22.0 statistical program. Basic descriptive statistics were computed to assess distributional properites of central tendency and variation. Pearson's bivariate correlations were computed to evaluate the basic linear associations between all variables. For the primary analyses, all predictors were mean-centered and standardized in order to reduce non-essential multicolinearity and enhance the interpretability of the first-order terms. The interaction term between perfectionism and dispositional mindfulness was computed utilizing these centered standardized variables.

To investigate the hypotheses, hierarchical multiple regression analyses was used. Simultaneous entry multiple regression was used to examine the main effects of all three predictor variables. Each of the two way interactions was tested independently first, then the three way interaction term was added in the final model. Significant interaction effects were plotted following the procedures outlined by Cohen, Cohen, West, and Aiken (2002).

RESULTS

Zero-Order Correlations and Descriptive Values

Less than 3 percent of values were missing for the variables of interest, and missing data were treated with listwise deletion, leaving 145 participants for analysis. The mean age of participants was 20.68 (SD=4.69) years. Eighty-three (57.2%) participants were Caucasian/White, 34 (23.4%) were African American/Black, 13 (9.0%) were Hispanic/Latino, 8 (5.5%) were Asian, 2 (1.4% were American Indian/Alaskan Native, and 5 (3.4 %) were Other. There was a relatively broad distribution of participants across year in school, with 49 (33.8%) of participants indicating that they were in year 1 of their undergraduate training, 32 (22.1%) in year 2, 31 (21.4%) in year 3, 32 (22.1%) in year 4, and 1 (0.7%) in post-baccalaureate training.

Basic descriptive statistics and zero-order correlations are shown in Table 1. Distributional properites of central tendency, shape (i.e., skewness and kurtosis), and variation were assessed for all variables of interest and found to be adequate. All means were within a reasonable range given their scales, indicating that no floor or ceiling effects occurred within the sample. Likewise, standard deviations indicate that the sample exhibited adequate variability in responses for each variable. Internal consistency reliability estimates for all measures are reported in bold in the diagonal in Table 1. (Note, each measure's subscales or subdomains were also assessed, and all scales demonstrated good internal consistency. Subscale analyses are not reported here for space purposes.)

Bivariate correlations between all predictor and criterion variables are also displayed in Table 1. Results indicate that ECP was positively related to perceived stress

with a moderate effect size, positively related to PSP with a small effect size, and negatively related to dispositional mindfulness with a moderate effect size. PSP was positively related to dispositional mindfulness with a small effect size, and was not significantly related to perceived stress. Dispositional mindfulness was negatively related to perceived stress with a moderate effect size. These bivariate correlations were all in the expected directions.

Hierarchical Multiple Regression

Results of the hierarchical moderated multiple regression analysis are displayed in Table 2. In the first model, only main effects were tested (Model 1). These results indicate that two of the three main effect hypotheses (H1a: ECP will be positively associated with perceived stress with a moderate effect size; H1c: dispositional mindfulness will be negatively associated with perceived stress with a moderate effect size) were supported. Hypothesis H1b (PSP will not be associated with perceived stress) was not supported, as a small but significant negative unique relationship between these variables was found. Specifically, results indicate that, controlling for each of the other predictors, ECP was positively related to perceived stress with a moderate effect size, PSP was negatively related to perceived stress with a small effect size, and dispositional mindfulness was negatively related to perceived stress with a moderate effect size.

For ease of interpretation, each 2-way interaction was examined independently (i.e., a separate hierarchical moderated regression analysis was conducted for each) before including all three two-way interactions in order to test the final 3-way interaction model (Models 2a to 2c, respectively). Results of model 2a indicate that the interaction between ECP and PSP accounted for an additional 2% of the variance in perceived stress

above and beyond the linear terms (ΔR^2 = .02, $F(1, 140) = 4.95$, $p < 0.05$). However, results of models 2b and 2c indicate that the interactions between ECP and dispositional mindfulness, and between PSP and dispositional mindfulness, did not significantly account for any additional variance (ΔR^2 = .01, $F(1, 140) = 1.60$, $p > 0.05$ and ΔR^2 = 0.0, $F(1, 140) = 0.0$, $p > 0.05$, respectively). Therefore, of the two-way interaction hypotheses, only H2c (PSP will moderate the relationship between ECP and perceived stress such that as PSP increases, the positive relationship between ECP and perceived stress will diminish) was preliminarily supported, though a plot of the simple slopes is necessary to fully examine this hypothesis (discussed below). The other 2-way interaction hypotheses, H2a (mindfulness will moderate the relationship between ECP and perceived stress such that as mindfulness increases, the positive relationship between ECP and perceived stress will diminish) and H2b (mindfulness will moderate the relationship between PSP and perceived stress such that as mindfulness increases, a negative relationship between PSP and perceived stress will emerge), were not supported.

In order to more fully examine H2c, simple slopes were plotted with perceived stress as the outcome. Following standard conventions (Cohen, Cohen, West & Aiken, 2003), scores reflecting +/- 1SD and the mean were used to solve the equations to plot the simple slopes. As shown in Figure 1, these simple slopes demonstrate that for individuals low (i.e., -1 SD) in PSP, ECP had a moderate positive effect on perceived stress (β =.31, $p < .05$). However, for individuals high (i.e., +1 SD) in PSP, ECP had a much larger effect on perceived stress (β =.59, $p < .05$). In other words, the relationship between ECP and perceived stress becomes progressively stronger as PSP increases. Therefore, although a significant interaction between ECP and PSP was found, results of the simple

slopes plot contradict the predicted nature of this interaction as put forth in hypothesis H2c. For ease of comparison between this significant interaction and the other non-significant 2-way interactions, simple slopes of the non-significant interactions were plotted as well (Figures 2 and 3).

In order to test hypothesis H3 (a significant 3-way interaction will be found between ECP, PSP, and dispositional mindfulness on perceived stress) a final hierarchical multiple regression model was examined in which all linear predictors were entered in step 1, all 2-way interactions were entered in step 2, and the 3-way interaction term between all three predictors (ECP, PSP, and dispositional mindfulness) was entered in step 3. Results indicate that the linear effects of PSP, ECP, and dispositional mindfulness accounted for a large proportion of the variance (54%) in perceived stress ($R^2 = .54$, $F(3, 141) = 54.26$, $p < .001$). All of the 2-way interaction terms combined accounted for an additional 3% of the variance in perceived stress above and beyond the linear terms ($\Delta R^2 = .03$, $F(3, 138) = 2.99$, $p < 0.05$). The 3-way interaction between ECP, PSP, and dispositional mindfulness did not significantly account for any additional variance in perceived stress ($\Delta R^2 = .01$, $F(1, 137) = 1.95$, $p > 0.05$) above and beyond the 2-way interactions. Therefore, hypothesis H3 was not supported.

DISCUSSION

Overall, previous research has indicated that perfectionism is a risk factor for stress, while dispositional mindfulness can act as a buffer against stress. As personality characteristics do not exist in isolation, the purpose of the present study was to examine the interactive effects of perfectionism (both evaluative concerns perfectionism (ECP) and personal strivings perfectionism (PSP)) and dispositional mindfulness on stress via hierarchical moderated multiple regression.

Interestingly, all three predictor variables, ECP, PSP, and dispositional mindfulness, were correlated with each other, albeit in different directions and to different extents. In line with one other study (Taylor et al., 2016), ECP and PSP exhibited a small positive correlation, indicating that these two aspects of perfectionism are related, yet quite distinct. This provides strong empirical support for current theoretical understandings of perfectionism as a two-factor construct. However, it should be noted that this relationship has only been examined in female samples, and thus generalizations to male samples are not yet warranted. PSP and dispositional mindfulness also exhibited a small positive correlation, while ECP and dispositional mindfulness exhibited a strong negative correlation. These results illustrate the complex nature of personality characteristics and further highlight the importance of examining multiple personality characteristics in tandem (i.e., in interacting ways), as opposed to singularly.

The main effects hypotheses (hypothesis 1a-1c) can be examined via both correlation analysis (Table 1) and regression analysis (Table 2). Although correlations between each predictor and perceived stress provide preliminary evidence for evaluating

each main-effect hypothesis (hypotheses 1a-1c), correlations do not allow for an analysis of the unique criterion variance accounted for by each individual predictor while controlling for the influence of the other predictor variables. However, simultaneous entry of all three predictors in a regression analysis (or within a single step of a hierarchical multiple regression analysis) allows for an examination of each predictor's unique influence on perceived stress, and, thus, provides a more rigorous examination of main effects. This control is crucial, particularly in circumstances where predictors are, in fact, correlated.

Regression analyses indicated that, in line with previous research and in support of hypothesis 1a, ECP is a strong predictor of perceived stress. In other words, experiencing a fear of making mistakes, unrealistic parental expectations and criticism, doubts about one's actions (Frost et al., 1990), and the fear of being unable to meet extremely high standards perceived to be set by others (Hewitt & Flett, 1991) acts as a risk factor and possibly even a promotive factor for perceived stress. Interestingly, regression results indicate that the opposite is true of PSP. Although H1b posited that PSP would not affect perceived stress, PSP, characterized by the striving for and the setting of excessively high standards for oneself and others with a particular focus on flaws (Frost et al., 1993), appears to serve as a beneficial and stress-protective factor, though somewhat weakly. However, this provides significant support for the notion that ECP and PSP are distinct constructs that can affect an outcome variable in opposing ways, opening the door to potential interaction effects. Additionally, it is important to note that neither ECP nor PSP exist in isolation and therefore, examination of their main effects provides only a cursory glance at the impact of perfectionism on perceived stress;

in order to truly understand the impact of perfectionistic tendencies on stress, these constructs must be examined in the context of each other.

Regression analyses also indicated that, in line with previous research and in support of hypothesis 1c, dispositional mindfulness is a strong protective factor against perceived stress. The majority of literature on mindfulness focuses on mindfulness meditation techniques as opposed to dispositional mindfulness as a personality trait, but these results provide significant support for the notion that naturally-occurring variation in dispositional mindfulness is important to consider as well. However, it is important to examine this trait in the context of other personality characteristics in order to more accurately examine its impact on important outcomes.

Results of the 2-way interaction between ECP and PSP indicate that these variables did interact to significantly predict perceived stress above and beyond the main effects of all predictors. Plotting this interaction (Figure 1) demonstrates that, although PSP serves as a protective factor against perceived stress on its own (i.e., via a main effect), this relationship is strongly contingent on the presence of ECP. However, results indicate that this interaction functions in the opposite direction than hypothesized: as PSP increases, the positive relationship between ECP and perceived stress gets stronger. Specifically, the plot of these slopes demonstrates that PSP only serves as a protective factor for individuals low in ECP; if an individual is high in ECP, PSP has no effect on perceived stress. Therefore, ECP seems to be the driving factor in the experience of perfectionism-related stress.

Results indicate that dispositional mindfulness did not interact with either ECP or PSP to predict perceived stress above and beyond the main effects. Although

mindfulness techniques have been touted as a potentially useful avenue for ameliorating some of the detrimental effects of perfectionistic aspects of personality, the present study may suggest that increasing one's dispositional mindfulness through mindfulness meditation techniques may not be a successful way of achieving such a goal. However, that is not to say that mindfulness meditation techniques would not impact some of the effects of the perceived stress itself as shown by the large negative main effect of mindfulness on stress.

Some key strengths of the present study are its utilization of regression analysis as opposed to the traditional group-based approach, as well as its incorporation of multiple personality factors in context with each other as opposed to exploring these individually. Utilizing regression analysis allows these predictor and criterion variables, both theorized and measured as continuous variables, to be examined continuously, as opposed to utilizing artificial dichotomization. In this way, a more nuanced examination of the relationships between these variables was conducted. Additionally, examining multiple personality characteristics in context with each other as opposed to individually allows for a more realistic understanding of how individuals may experience stress.

There are some limitations to the present study. First, the sample utilized was an all female, mostly White, relatively young, academic sample. Thus, we were unable to test the boundary conditions of the proposed relationships with regard to these variables, and generalizability to groups beyond that studied should not be assumed. Although gender differences have been explored in the context of perfectionism (Sherry, Gralnick, Hewitt, Sherry, & Flett, 2014; Joachim Stoeber & Stoeber, 2009), no evidence of a moderating effect of gender has been found. However, no research to date has

examined gender differences with regard to the specific ECP/PSP conceptualization utilized in the present study, so it stands to reason that the lack of interactions between dispositional mindfulness and ECP/PSP found in the present study may not hold true in other mixed-gender samples. Additionally, the present study only examined dispositional mindfulness via the FFMQ total score as opposed to examining specific facets of mindfulness. Future research should examine interactions between each individual facet of dispositional mindfulness and perfectionism; however, it should again be noted that personality factors, including subfactors of dispositional mindfulness, do not exist in isolation.

As the present study demonstrates that ECP is the driving force behind the perfectionism-stress relationship and that PSP does not act as a stress buffer when ECP is high, it stands to reason that individuals who suffer from stress as a result of perfectionism may need to focus on adjusting their ECP tendencies. In the context of perfectionism and stress, the current study provides evidence that lessening one's ECP tendencies would have a drastic effect on perceived stress; attempting to adjust one's PSP tendencies would not necessarily have an impact on this outcome. Although personality characteristics were once considered stable through the lifetime, recent research has indicated that they can evolve over the lifespan (Hounkpatin, Wood, Boyce, & Dunn, 2015), though the ability to intentionally alter aspects of personality characteristics is currently unknown.

Additionally, it should be noted that dispositional mindfulness, on its own, is a strong stress-protective factor. While the possibility of altering one's perfectionist tendencies is currently unknown, research has indicated that it is possible to alter one's

level of dispositional mindfulness via mindfulness meditation techniques. Additionally, mindfulness meditation has been shown to target some of the aspects supposedly underlying the perfectionism-stress relationship (e.g., rumination, worry), and, thus, may have an effect. Future research may yield profitable results by considering how to adapt mindfulness meditation techniques to help those dealing with strong tendencies to experience ECP.

Overall, the present study provides strong empirical support for a complex interaction between factors of perfectionism and stress. Additional research is needed to further understand the underlying mechanisms at play in this relationship and to uncover potential avenues for intervening with regard to the experience of stress.

REFERENCES

Antony, M. M., & Swinson, R. P. (2009). *When perfect isn't good enough: Strategies for coping with perfectionism*. Oakland, CA: New Harbinger Publications. Retrieved from http://www.books24x7.com/marc.asp?bookid=53307

Azam, M. A., Katz, J., Fashler, S. R., Changoor, T., Azargive, S., & Ritvo, P. (2015). Heart rate variability is enhanced in controls but not maladaptive perfectionists during brief mindfulness meditation following stress-induction: A stratified-randomized trial. *INTPSY International Journal of Psychophysiology*, *98*(1), 27–34.

Baer, R. A. (2006). Mindfulness training as a clinical intervention: A conceptual and empirical review. *Clinical Psychology: Science and Practice*, *10*(2), 125–143. doi:10.1093/clipsy.bpg015

Baer, R. A. (2006). Using self-report assessment methods to explore facets of mindfulness. *Assessment*, *13*(1), 27–45. doi:10.1177/1073191105283504

Baer, R. A., Smith, G. T., & Allen, K. B. (2004). Assessment of mindfulness by self-report: The Kentucky Inventory of Mindfulness Skills. *Assessment*, *11*(3), 191–206.

Baer R.A., Smith G.T., Lykins E., Button D., Krietemeyer J., Sauer S., … Williams J.M. (2008). Construct validity of the five facet mindfulness questionnaire in meditating and nonmeditating samples. *Assessment*, *15*(3), 329–42.

Barnhofer, T., Duggan, D. S., & Griffith, J. W. (2011). Dispositional mindfulness moderates the relation between neuroticism and depressive symptoms.

Personality and Individual Differences Personality and Individual Differences, *51*(8), 958–962.

Bishop, S. R., Lau, M., Shapiro, S., Carlson, L., Anderson, N. D., Carmody, J., … Devins, G. (2004). Mindfulness: A proposed operational definition. *CPSP Clinical Psychology: Science and Practice*, *11*(3), 230–241.

Brown, B. (2010). *The gifts of imperfection: Let go of who you think you're supposed to be and embrace who you are*. Center City, Minn.: Hazelden. Retrieved from http://public.eblib.com/choice/publicfullrecord.aspx?p=1145365

Brown, K. W., Ryan, R. M., Loverich, T. M., Biegel, G. M., & West, A. M. (2011). Out of the armchair and into the streets: Measuring mindfulness advances knowledge and improves interventions: Reply to Grossman (2011). *Psychological Assessment*, *23*(4), 1041–1046. doi:10.1037/a0025781

Brown, K. W., Weinstein, N., & Creswell, J. D. (2012). Trait mindfulness modulates neuroendocrine and affective responses to social evaluative threat. *Psychoneuroendocrinology*, *37*(12), 2037–2041. doi:10.1016/j.psyneuen.2012.04.003

Brown KW, & Ryan RM. (2003). The benefits of being present: Mindfulness and its role in psychological well-being. *Journal of Personality and Social Psychology*, *84*(4), 822–48.

Campbell, J. D., & DiPaula, A. (2002). Perfectionistic self-beliefs: Their relation to personality and goal pursuit. In P. L. Hewitt & G. L. Flett (Eds.), *Perfectionism: Theory, research, and treatment* (pp. 255–284). Washington, DC, US: American Psychological Association.

Chang, E. C., Watkins, A., & Banks, K. H. (2004). How adaptive and maladaptive perfectionism relate to positive and negative psychological functioning: testing a stress-mediation model in black and white female college students. *Journal of Counseling Psychology*, *51*(1), 93–102. doi:10.1037/0022-0167.51.1.93

Childs, J. H., & Stoeber, J. (2012). Do you want me to be perfect? Two longitudinal studies on socially prescribed perfectionism, stress and burnout in the workplace. *Work & Stress*, *26*(4), 347–364. doi:10.1080/02678373.2012.737547

Cohen, J., Cohen, P., West, S. G., & Aiken, L. S. (2002). *A Review of Applied Multiple Regression/Correlation Analysis for the Behavioral Sciences* (3rd ed.).

Cohen, S., Kamarck, T., & Mermelstein, R. (1983). A Global Measure of Perceived Stress. *Jhealsocibeha Journal of Health and Social Behavior*, *24*(4), 385–396.

Cohen, S., & Williamson, G. (1988). Perceived stress in a probability sample of the United States. In I. Spacapan & S. Oskamp (Eds.), *The social psychology of health* (pp. 31–67). Thousand Oaks, CA: Sage Publications, Inc.

Cohen S., & Wills T.A. (1985). Stress, social support, and the buffering hypothesis. *Psychological Bulletin*, *98*(2), 310–57.

Creswell, J. D., & Lindsay, E. K. (2014). How does mindfulness training affect health? A mindfulness stress buffering account. *Current Directions in Psychological Science*, *23*(6), 401–407. doi:10.1177/0963721414547415

Creswell, J. D., Pacilio, L. E., Lindsay, E. K., & Brown, K. W. (2014). Brief mindfulness meditation training alters psychological and neuroendocrine responses to social evaluative stress. *Psychoneuroendocrinology*, *44*, 1–12. doi:10.1016/j.psyneuen.2014.02.007

Douilliez, C., & Lefèvre, F. (2011). Interactive effect of perfectionism dimensions on depressive symptoms: A reply to Gaudreau and Thompson (2010). *Personality and Individual Differences*, *50*(7), 1147–1151. doi:10.1016/j.paid.2011.02.005

Feldman, G., Hayes, A., Kumar, S., Greeson, J., & Laurenceau, J.-P. (2007). Mindfulness and emotion regulation: The development and initial validation of the Cognitive and Affective Mindfulness Scale-Revised (CAMS-R). *Journal of Psychopathology and Behavioral Assessment*, *29*(3), 177–190. doi:10.1007/s10862-006-9035-8

Flett, G. L., & Hewitt, P. L. (2006). Positive versus negative perfectionism in psychopathology a comment on Slade and Owens's dual process model. *Behavior Modification*, *30*(4), 472–495. doi:10.1177/0145445506288026

Frost, R. O., Heimberg, R. G., Holt, C. S., Mattia, J. I., & Neubauer, A. L. (1993). A comparison of two measures of perfectionism. *Personality and Individual Differences*, *14*(1), 119–126. doi:10.1016/0191-8869(93)90181-2

Frost, R. O., Marten, P., Lahart, C., & Rosenblate, R. (1990). The dimensions of perfectionism. *Cognitive Therapy and Research.*, *14*(5), 449. doi:10.1007/BF01172967

Gaudreau, P. (2012). A methodological note on the interactive and main effects of dualistic personality dimensions: An example using the 2 × 2 model of perfectionism. *Personality and Individual Differences*, *52*(1), 26–31. doi:10.1016/j.paid.2011.08.022

Gaudreau, P. (2015). Self-assessment of the four subtypes of perfectionism in the 2 × 2 model of perfectionism. *Personality and Individual Differences*, *84*, 52–62. doi:10.1016/j.paid.2014.10.039

Gaudreau, P., & Thompson, A. (2010). Testing a 2 × 2 model of dispositional perfectionism. *Personality and Individual Differences*, *48*(5), 532–537. doi:10.1016/j.paid.2009.11.031

Gaudreau, P., & Verner-Filion, J. (2012). Dispositional perfectionism and well-being: A test of the 2 x 2 model of perfectionism in the sport domain. *Sport, Exercise, and Performance Psychology*, *1*(1), 29–43. doi:10.1037/a0025747

Harrington, R., Loffredo, D. A., & Perz, C. A. (2014). Dispositional mindfulness as a positive predictor of psychological well-being and the role of the private self-consciousness insight factor. *Personality and Individual Differences*, *71*, 15–18. doi:10.1016/j.paid.2014.06.050

Hewitt, P. L., & Flett, G. L. (1991). Perfectionism in the self and social contexts: conceptualization, assessment, and association with psychopathology. *Journal of Personality and Social Psychology*, *60*(3), 456.

Hewitt, P. L., & Flett, G. L. (1993). Dimensions of perfectionism, daily stress, and depression: A test of the specific vulnerability hypothesis. *Journal of Abnormal Psychology*, *102*(1), 58–65. doi:10.1037/0021-843X.102.1.58

Hewitt, P. L., & Flett, G. L. (2002). Perfectionism and stress processes. In P. L. Hewitt & G. L. Flett (Eds.), *Perfectionism: Theory, research, and treatment* (pp. 255–284). Washington, DC, US: American Psychological Association.

Hewitt, P. L., Flett, G. L., Turnbull-Donovan, W., & Mikail, S. F. (1991). The Multidimensional Perfectionism Scale: Reliability, validity, and psychometric properties in psychiatric samples. *Psychological Assessment /*, *3*(3), 464–468.

Hewitt PL, & Flett GL. (1991a). Dimensions of perfectionism in unipolar depression. *Journal of Abnormal Psychology*, *100*(1), 98–101.

Hewitt PL, & Flett GL. (1991b). Perfectionism in the self and social contexts: conceptualization, assessment, and association with psychopathology. *Journal of Personality and Social Psychology*, *60*(3), 456–70.

Hounkpatin, H. O., Wood, A. M., Boyce, C. J., & Dunn, G. (2015). An existential-humanistic view of personality change: Co-occurring changes with psychological well-being in a 10 year cohort study. *Social Indicators Research*, *121*(2), 455–470. doi:10.1007/s11205-014-0648-0

James, K., Verplanken, B., & Rimes, K. A. (2015). Self-criticism as a mediator in the relationship between unhealthy perfectionism and distress. *PAID Personality and Individual Differences*, *79*, 123–128.

Kabat-Zinn, J. (2003). Mindfulness-based interventions in context: Past, present, and future. *Clinical Psychology: Science and Practice*, *10*(2), 144–156. doi:10.1093/clipsy/bpg016

Kabat-Zinn, J. (2005). *Full catastrophe living: Using the wisdom of your body and mind to face stress, pain, and illness (15th anniversary ed.)*. New York, NY, US: Delta Trade Paperback/Bantam Dell.

Lazarus, R. S. (1966). *Psychological stress and the coping process*. New York: McGraw-Hill.

Lazarus, R. S., & Folkman, S. (1984). *Stress, appraisal, and coping*. New York: Springer Pub. Co.

Lundh, L.-G. (2004). Perfectionism and Acceptance. *Journal of Rational-Emotive & Cognitive-Behavior Therapy*, *22*(4), 251–265.

Marlatt, G. A., & Kristeller, J. L. (1999). Mindfulness and meditation. In W.R. Miller (Ed.), *Integrating spirituality into treatment: Resources for practitioners* (pp. 67–84). Washington, DC, US: American Psychological Association.

McCraty, R., & Shaffer, F. (2015). Heart rate variability: New perspectives on physiological mechanisms, assessment of self-regulatory capacity, and health risk. *Global Advances in Health and Medicine*, *4*(1), 46–61. doi:10.7453/gahmj.2014.073

O'Connor, D. B., O'Connor, R. C., & Marshall, R. (2007). Perfectionism and psychological distress: evidence of the mediating effects of rumination. *PER European Journal of Personality*, *21*(4), 429–452.

Parker, W. D. (1997). An empirical typology of perfectionism in academically talented children. *American Educational Research Journal*, *34*(3), 545–562. doi:10.3102/00028312034003545

Rice, K. G., & Ashby, J. S. (2007). An efficient method for classifying perfectionists. *Journal of Counseling Psychology*, *54*(1), 72–85. doi:10.1037/0022-0167.54.1.72

Rice, K. G., Leever, B. A., Christopher, J., & Porter, J. D. (2006). Perfectionism, stress, and social (dis)connection: A short-term study of hopelessness, depression, and academic adjustment among honors students. *Journal of Counseling Psychology*, *53*(4), 524–534.

Rice, K. G., & Preusser, K. J. (2002). The Adaptive/Maladaptive Perfectionism Scale. *Measurement and Evaluation in Counseling and Development*, *34*(4), 210–22.

Rice, K. G., & Van Arsdale, A. C. (2010). Perfectionism, perceived stress, drinking to cope, and alcohol-related problems among college students. *Journal of Counseling Psychology*, *57*(4), 439–450. doi:10.1037/a0020221

Royston, P., Altman, D. G., & Sauerbrei, W. (2006). Dichotomizing continuous predictors in multiple regression: a bad idea. *Statistics in Medicine*, *25*(1), 127–141. doi:10.1002/sim.2331

Selye, H. (1956). *The stress of life.* New York: McGraw-Hill.

Sherry, S. B., Gralnick, T. M., Hewitt, P. L., Sherry, D. L., & Flett, G. L. (2014). Perfectionism and narcissism: Testing unique relationships and gender differences. *Personality and Individual Differences*, *61–62*, 52–56. doi:10.1016/j.paid.2014.01.007

Short, M. M., & Mazmanian, D. (2013). Perfectionism and negative repetitive thoughts: Examining a multiple mediator model in relation to mindfulness. *Personality & Individual Differences*, *55*(6).

Somov, P. G. (2010). *Present perfect: a mindfulness approach to letting go of perfectionism & the need for control*. Oakland, CA: New Harbinger Publications.

Stoeber, J., Harris, R. A., & Moon, P. S. (2007). Perfectionism and the experience of pride, shame, and guilt: Comparing healthy perfectionists, unhealthy perfectionists, and non-perfectionists. *PAID Personality and Individual Differences*, *43*(1), 131–141.

Stoeber, J., & Otto, K. (2006). Positive conceptions of perfectionism: Approaches, evidence, challenges. *Personality and Social Psychology Review*, *10*(4), 295–319. doi:10.1207/s15327957pspr1004_2

Stoeber, J., & Stoeber, F. S. (2009). Domains of perfectionism: Prevalence and relationships with perfectionism, gender, age, and satisfaction with life. *Personality and Individual Differences*, *46*(4), 530–535. doi:10.1016/j.paid.2008.12.006

Stumpf, H., & Parker, W. D. (2000). A hierarchical structural analysis of perfectionism and its relation to other personality characteristics. *Personality and Individual Differences*, *28*(5), 837–852. doi:10.1016/S0191-8869(99)00141-5

Taylor, J. J., Papay, K. A., Webb, J. B., & Reeve, C. L. (2016). The good, the bad, and the interactive: Evaluative concerns perfectionism moderates the effect of personal strivings perfectionism on self-esteem. *Personality and Individual Differences Personality and Individual Differences*, *95*(1), 1–5.

Terry-Short, L. A., Owens, R. G., Slade, P. D., & Dewey, M. E. (1995). Positive and negative perfectionism. *Personality and Individual Differences*, *18*(5), 663–668. doi:10.1016/0191-8869(94)00192-U

UNC Charlotte Campus Diversity Plan Progress Report. (2013). Retrieved from http://diversity.uncc.edu/sites/diversity.uncc.edu/files/media/Diversity-Plan-Progress-Report-Winter-2012-2013.pdf

Walach, H., Buchheld, N., Buttenmüller, V., Kleinknecht, N., & Schmidt, S. (2006). Measuring mindfulness—the Freiburg Mindfulness Inventory (FMI). *PAID Personality and Individual Differences*, *40*(8), 1543–1555.

Whitley, B. E., & Kite, M. E. (2013). *Principles of research in behavioral science*. New York; London: Psychology Press.

APPENDIX A: STRESS: PERCEPTIONS AND APPRAISAL

It was once thought that stress affected individuals in a ubiquitous, predictable, and solely physiological way (Selye, 1956). However, the physiological stress response, though often examined from a purely biological lens, exists within a complex framework of cognitive perceptions and appraisals, and this is where individual differences come into play (Lazarus, 1966). Although certain events or tasks are often universally referred to as "stressors" or "stressful" events, this general assumption ignores the more nuanced reality of how stress gets under the skin. Situational factors are not identically stressful to each individual who encounters them; rather, it is an individual's contextually relevant personal perception and appraisal of both situational factors and available resources (be they cognitive, social, financial, etc.) that influence whether an event becomes categorized as stressful or not (Lazarus, 1966). For example, finding out that one's vehicle requires major repairs may be incredibly stressful to an individual who relies on that vehicle to get to work each day and who does not have the financial ability to pay for the repairs. However, to an individual who has the finances easily available and who has a second vehicle to use in the meantime, this may only be interpreted as a minor inconvenience. Therefore, an individual's physiological stress response is affected to a far greater extent by stress perceptions and appraisals, as opposed to "objective" stressful events (Cohen, Kamarck, & Mermelstein, 1983).

Evolving out of this understanding of perception and individual differences regarding the experience of stress was Lazarus and Folkman's Transactional Model of Stress (1984). This mediating model emphasized the importance of examining "the cognitive processes that intervene between the encounter and the reaction, and the factors

that affect the nature of this mediation" (Lazarus & Folkman, 1984, p.23). Specifically, these researchers posited that both cognitive appraisal and coping resources mediate the relationship between stimulus and response.

In their theory, Lazarus and Folkman (1984) delineated two specific types of appraisal: primary and secondary (though they vehemently argue that these semantics do not indicate that one is more important than other, nor that primary appraisal necessarily precedes secondary appraisal in a temporal fashion). Primary appraisal is an evaluation of the relevance of the situation or stimulus itself (i.e., what is at stake). Lazarus and Folkman (1984) explained five different categories of primary appraisals: primary appraisals can indicate that the situation/stimulus is irrelevant, is benign/positive, constitutes a harm or loss, is a threat, or is a challenge. Irrelevant appraisals occur "when an encounter with the environment carries no implication for a person's well-being" (p.32) and benign/positive appraisals occur "if the outcome of an encounter is construed as positive, that is, if it preserves or enhances well-being or promises to do so" (p.32). According to the authors, neither of these appraisals results in the actual experience of stress because stress can only result in the context of a situation that is potentially taxing in some way.

However, stress becomes evident as a result of the other primary cognitive appraisals. Harm/loss appraisals occur when **"**some damage to the person has already been sustained, as in an incapacitating injury or illness, recognition of some damage to self- or social esteem, or loss of a loved or valued person" (Lazarus & Folkman, 1984, p. 32), threat appraisals concern **"**harms or losses that have not yet taken place but are anticipated" (p.32), and challenge appraisals "focus on the potential for gain or growth

inherent in an encounter" (p.33). While these three appraisals are directly linked with the experience of stress in their theory, Lazarus and Folkman (1984) pointed out that they result in different types of psychological stress and that these appraisals are neither stagnant nor permanent and can, in fact, shift from one to the other as a situation unfolds (Lazarus & Folkman, 1984). In this way, primary appraisals are considered to be a dynamic and unfolding process.

While primary appraisals assess the relevance of a situation to an individual, secondary appraisals assess available coping options for dealing with the situation. Specifically, Lazarus and Folkman (1984) claim that secondary appraisal is "a complex evaluative process that takes into account which coping options are available, the likelihood that a given coping option will accomplish what it is supposed to, and the likelihood that one can apply a particular strategy or set of strategies effectively" (Lazarus & Folkman, 1984, p. 35). They define coping as "the process through which the individual manages the demands of the person-environment relationship that are appraised as stressful and the emotions they generate" (p.19) and as "constantly changing cognitive and behavioral efforts to manage specific external and/or internal demands that are appraised as taxing or exceeding the resources of the person" (p.141). Lazarus and Folkman (1984) emphasize that it is this particular facet of the stress experience that has the most influential aspect when it comes to the consequences of stress. They claim that, "while stress is an inevitable aspect of the human condition, it is coping that makes the big difference in adaptational outcome" (Lazarus & Folkman, 1984, p.6).

APPENDIX B: TABLES

Table 1: Correlation matrix (with means, standard deviations, and reliabilities) for all predictor and criterion variables.

	M (SD)	1	2	3	4
1. ECP	2.82 (.55)	**.93**			
2. PSP	3.73 (.62)	.19*	**.86**		
3. Mindfulness	3.15 (.44)	-.47***	.20*	**.74**	
4. Perceived Stress	3.12 (.56)	.62***	-.11	-.62***	**.85**

Note. *N*=145. *M* = Mean. *SD* = Standard deviation. Reliabilities (Chronbach's alpha) are shown in the diagonal in bold.
* $p < .05$. ** $p < .01$. *** $p < .001$

Table 2: Hierarchical multiple regression results for variables predicting perceived stress

	Model 1		*Model 2a*		*Model 2b*		*Model 2c*		*Model 3*	
Predictors	*b*	*S.E.*	*b*	*S.E.*	*b*	*S.E.*	*b*	*S.E.*	*b*	*S.E.*
Main effects										
(Intercept)	.01	.06	.02	.06	.04	.06	.01	.06	.008	.07
ECP	.47***	.07	.44***	.07	.49***	.07	.47***	.07	.46***	.07
PSP	-.13*	.06	-.14*	.06	-.12*	.06	-.13*	.07	-.15*	.07
FFMQ	-.37***	.07	-.35***	.07	-.35***	.07	-.37***	.07	-.33***	.07
2-way IX										
ECP*PSP			.14*	.06					.16*	.07
ECP*FFMQ					.07	.06			.14*	.07
PSP*FFMQ							-.002	.06	0.07	.07
3-way IX										
ECP*PSP*FFMQ									-.10	.07
R²	**.54**		**.55**		**.54**		**.54**		**.57**	
ΔR²	**.54*** **		**.02***		**.01**		**.00**		**.01**	

Note. $N = 146$. *b* = properly standardized regression coefficient; *S.E.* = standard error of the standardized coefficient; R^2 = Variance, ΔR^2 = Incremental Variance.
* $p < .05$. ** $p < .01$. *** $p < .001$

APPENDIX C: FIGURES

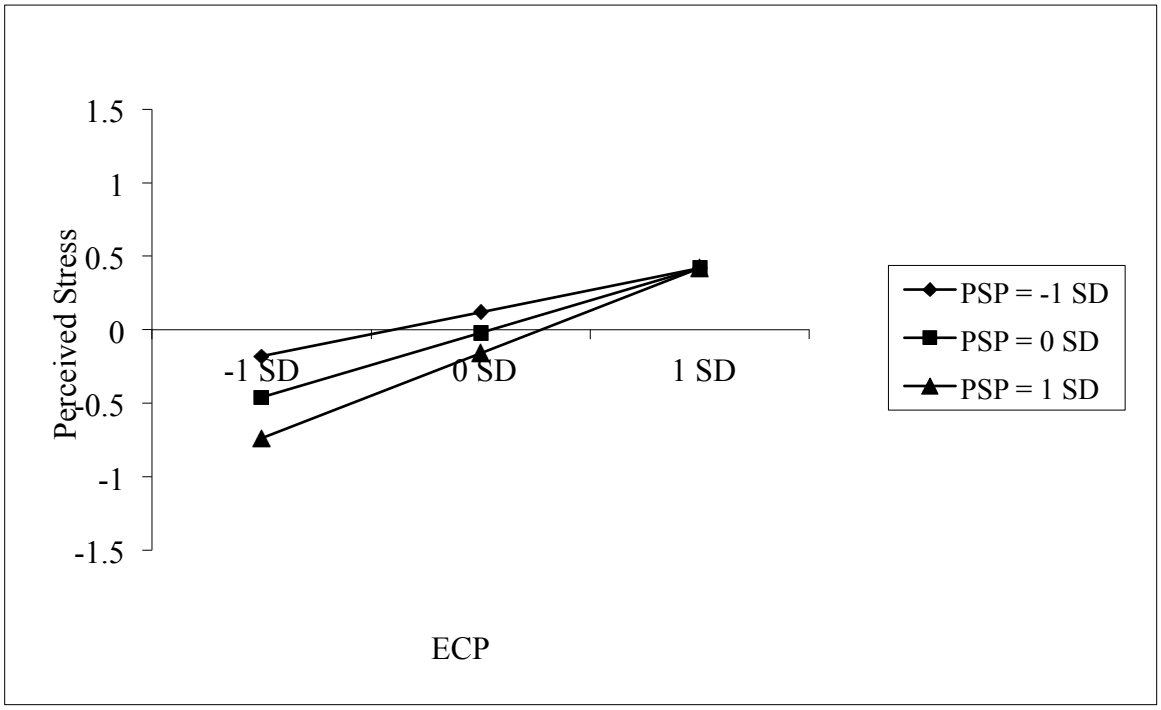

Figure 1: Significant interaction of personal strivings perfectionism and evaluative concerns perfectionism on perceived stress.

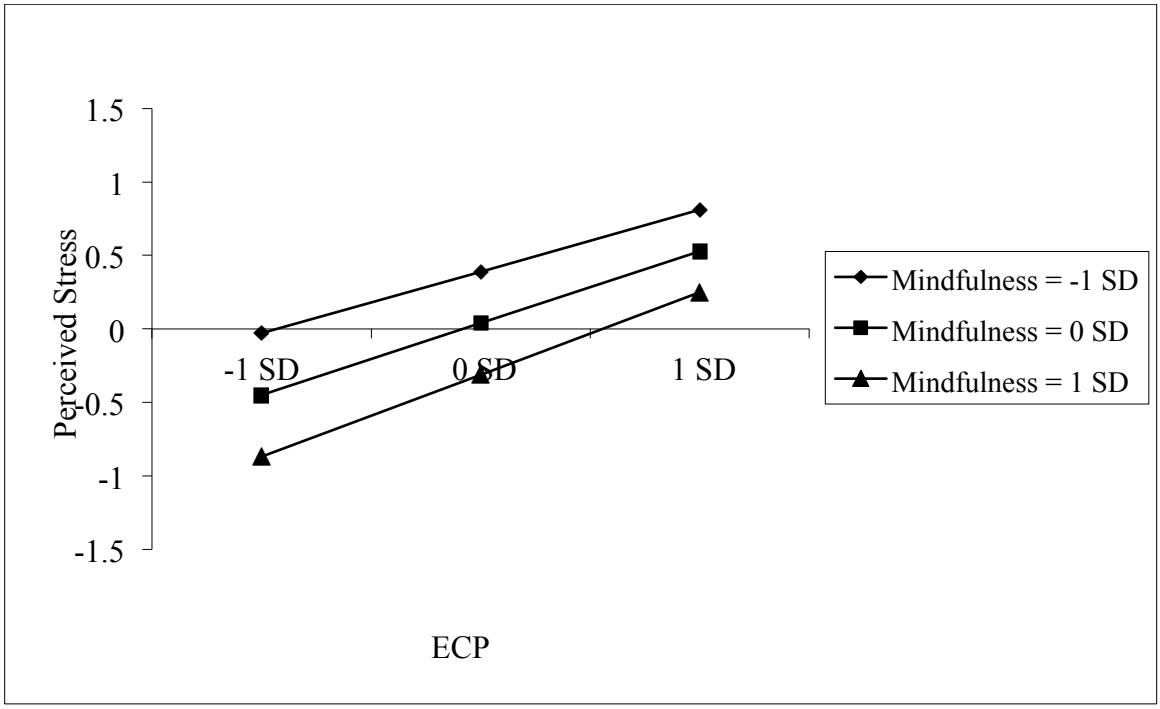

Figure 2: Non-significant interaction of dispositional mindfulness and evaluative concerns perfectionism on perceived stress.

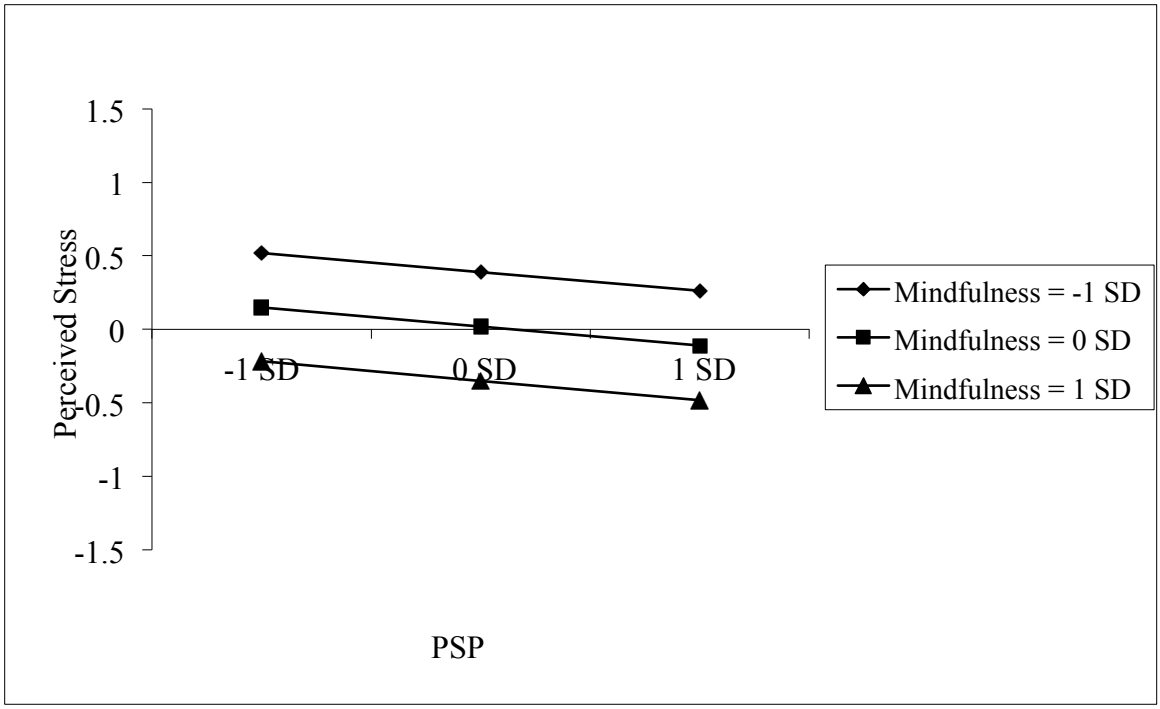

Figure 3: Non-significant interaction of dispositional mindfulness and personal strivings perfectionism on perceived stress.