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Perfectionism, Negative Affect, Anxiety, and Self-evaluations for Brief Tasks

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Abstract

Perfectionism is a trait with multiple dimensions, which vary in terms of associated costs and benefits. Maladaptive perfectionism is related to neuroticism and involves self-criticism and perceptions of difficulty meeting high standards. In contrast, adaptive perfectionism is associated with conscientiousness and can be considered the healthy pursuit of high standards with minimal distress. Assessment of perfectionism has primarily been limited to self-report, so the present study investigated relationships between perfectionism dimensions and responses to a computerized search task in a sample of 133 undergraduates. In addition, friends and parents were asked to rate several traits of the participant using an online survey. The cost of errors for the task was manipulated, and maladaptive perfectionism subscales were hypothesized to predict worse performance and more task-related distress.

Although neither maladaptive perfectionism nor adaptive perfectionism predicted task performance as hypothesized, maladaptive perfectionism predicted worse reactions (e.g., activated negative affect, frustration) to the task; however, incremental validity was limited. Unexpectedly, post-hoc analyses revealed that adaptive perfectionism predicted more frustration and less satisfaction for the task above and beyond conscientiousness. Informant ratings of participant personality traits demonstrated agreement, even for less observable measures, and achieved incremental validity beyond similar participant ratings in a few instances (e.g., task confidence). Informant ratings of personality seem to be useful supplements to self-report perfectionism measures. In addition, a brief task may not be suitable for observing the distinctive behavioral patterns of perfectionists. Although perfectionism dimensions overlap considerably with higher order personality

constructs, they can provide unique information about meaningful outcomes. Recommendations for future research and implications are discussed.

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Perfectionism, Negative Affect, Anxiety, and Self-evaluations for Brief Tasks

Perfectionism is a trait thought to encompass positive (e.g., lofty performance) and negative tendencies (e.g., excessive stress, self-criticism) depending upon the individual and the context. Individuals with maladaptive expressions of perfectionism have been described as "unable to feel satisfaction because in their own eyes they never seem to do things good enough to warrant that feeling," and this, along with a pervasive fear of failure, could lead to a variety of negative emotions (see Hamachek, 1978, pp. 27). Perfectionism is also thought to be pathological when individuals set overly ambitious goals, thereby setting themselves up for failure (e.g., Burns, 1980; Pacht, 1984). In addition, several researchers have suggested that perfectionism is characterized by black and white thinking (e.g., Antony & Swinson, 2009; Beck, 1995; Greenberger & Padesky, 1995). Perfectionistic individuals may believe that their standards are not stringent enough if they are not making major sacrifices, and levels of discipline can be excessive (Shafran, Cooper, & Fairburn, 2002). Given these maladaptive tendencies, it should come as no surprise that perfectionism is associated with psychological symptoms including disordered eating, anxiety, and depression (for a review, see Shafran & Mansell, 2001). However, it is unclear how the maladaptive aspects of the construct relate to responses in performance situations. For example, there have been few studies of controlled tasks that reliably evoke affective responses among perfectionists.

This dissertation is designed to systematically explore responses to a computer task that has been found to be relevant to perfectionism. Doing so would provide information about a potentially efficient assessment tool for future research on perfectionism. In addition, identifying a laboratory task that tends to heighten

perfectionistic concerns, thereby arousing negative affect and related responses, among individuals with high levels of maladaptive perfectionism would facilitate developing interventions for ameliorating perfectionism-related distress.

Establishing a precise definition of perfectionism could facilitate more rapid empirical developments and more efficacious treatments targeting perfectionism-related distress (Shafran et al., 2002). Shafran and colleagues describe clinical perfectionism as "the overdependence of self-evaluation on the determined pursuit of personally demanding, self-imposed, standards in at least one highly salient domain, despite adverse consequences" (p. 778). According to Shafran et al.'s theory, falling short of personal standards contributes to self-criticism, and perfectionism may persist because the excessively high standards are applied to a highly valued domain (Shafran et al.). Merely having high standards without negative self-evaluation can be beneficial (e.g., Frost, Heimberg, Holt, Mattia, & Neubauer, 1993; Terry-Short, Owens, Slade, & Dewey, 1995). Thus, Shafran and colleagues' conception of clinical perfectionism also includes significant distress or impairment in an important domain of functioning (e.g., interpersonal, occupational). Achieving objectives may be seen as a reason to raise expectations for performance in similar situations (e.g., Besser, Flett, & Hewitt, 2004; Kobori, Hayakawa, & Tanno, 2009; Stoeber, Hutchfield, & Wood, 2008). This process of being either unsatisfied when goals are met or distressed when goals, which are often difficult or impossible to achieve, are not met could conceivably establish a pattern of excessive negative affect with infrequent positive affect.

Extreme fear of failure and the exertion of great effort in striving for standards are thought to be central to perfectionism (e.g., Shafran et al., 2002). Failing to meet goals

could lead to more negative self-evaluation and reinforcement of the notion that perfectionists need to work harder to reach their standards (Shafran et al.). A self-focused form of perfectionism has been linked with strong concerns about failing (e.g., Flett, Blankstein, Hewitt, & Koledin, 1992) and difficulty coping with perceived mistakes (e.g., Besser et al., 2004).

According to some theories, clinical perfectionists tend to judge their performance in such a way that mistakes, the extent of which may be exaggerated, are emphasized at the expense of achievements (see Antony & Swinson, 2009). These individuals may have heightened sensitivity to errors and could be acutely attuned to their occurrence. Rumination and excessive checking are thought to be common, and these processes could undermine performance through distraction (Shafran et al., 2002). Given the intense focus on excessively high standards and concern about failure, tasks may be avoided or terminated prematurely (see Frost, Marten, Lahart, & Rosenblate, 1990; Slade & Owens, 1998). There seems to be a link between procrastination and the realization that one's standards are unlikely to be met, yet standards may often remain unreasonably high (Shafran et al., 2002).

Some theorists suggest that perfectionistic self-criticism involves the tendency to overgeneralize the implications of failures such that judgments about oneself are often negative (see Burns, 1980). On occasions when high standards are met, positive feelings may quickly be replaced by the impression that standards need to be raised, perpetuating a cycle of mistakes and negative self-evaluation (Shafran et al., 2002). In addition to the intrinsic reward of occasionally meeting high standards, perfectionism can be fostered by a demanding home environment (e.g., high parental expectations; Frost, Lahart, &

Rosenblate, 1991) and the benefits that can accompany good performance. These and other reinforcing aspects of perfectionistic standards (e.g., having a limited set of clear objectives) may partially offset obvious costs such as interpersonal difficulties, stress, impaired health, and reduced self-esteem (Shafran et al.).

Researchers have argued for a focus on the individual (e.g., Shafran et al., 2002) or the interpersonal context (e.g., Hewitt, Flett, Besser, Sherry, and McGee, 2003). Shafran and Mansell (2001) define what they consider clinically relevant perfectionism in terms of intrapersonal processes (i.e., striving for high standards with fear of making mistakes) and note that this construct may be related to concerns about others' standards. In contrast, Hewitt et al. suggest that interpersonal processes could be central to understanding how perfectionism contributes to psychological functioning. Many authors have investigated both self-focused and interpersonal aspects of perfectionism (for a review, see Dunkley, Blankstein, Masheb, & Grilo, 2006).

Perfectionism might be a unified construct involving high standards and poor coping with mistakes; however, these may be differentiable dimensions. Many researchers consider perfectionism to be multidimensional (e.g., Dunkley et al., 2006; Frost et al., 1990; Hewitt & Flett, 1991; Slaney, Rice, Mobley, Trippi, & Ashby, 2001), whereas others have contended that the construct of perfectionism relevant to psychopathology is unidimensional (e.g., Shafran et al., 2002; Shafran, Cooper, & Fairburn, 2003). Shafran et al. (2003) suggest that clinical perfectionism entails excessive striving for high standards combined with critical self-evaluation. Several researchers contend that high standards and critical self-evaluation are disparate constructs and, further, that high standards can actually be adaptive (for a review, see Stoeber & Otto,

2006). Thus, the problematic consequences of high standards may only emerge when individuals also tend to evaluate themselves harshly. Stoeber and Otto support the notion that critical self-evaluation appears to be the crucial variable. Similarly, Dunkley et al. report that self-criticism accounts for a significant portion of the relationship between perfectionism and psychological symptoms (e.g., anxiety) in samples of patients with binge eating disorder and typical undergraduates.

Among descriptions of the maladaptive aspects of perfectionism, there seems to be consensus regarding the detrimental effects of demanding unrealistically high achievements from oneself, selectively attending to mistakes, and being excessively critical about the implications of mistakes (for a review, see Shafran et al., 2002). Early multidimensional perspectives on perfectionism identified various components, including some consistent with notions of clinical perfectionism (e.g., excessive concern about mistakes) and some relating to interpersonal dynamics (e.g., imposing unrealistically high standards on others) (for a review, see Shafran et al.).

In sum, several theories about perfectionism share similarities and offer predictions about how different types of perfectionists are likely to react in specific situations, but some of these hypotheses have not been consistently supported or fully explored. For instance, researchers tend to agree that maladaptive perfectionism should be associated with excessive concern about errors. The present study will explore the extent to which maladaptive and adaptive aspects of perfectionism predict performance, affective responses, and cognitive responses on a computer task.

Measurement of Perfectionism

Several perfectionism questionnaires have been developed, but two multidimensional measures with good psychometric properties were utilized in the present investigation. It has been proposed that Frost and colleagues' Multidimensional Perfectionism Scale (FMPS; Frost et al., 1990) measures two basics aspects of perfectionism: (a) high personal standards and (b) concerns about evaluation. As defined by Frost et al. (1993), the Maladaptive Evaluative Concerns (MEC) subscale draws from the FMPS's Concern over Mistakes, Doubts about Actions, Parental Criticism, and Parental Expectations subscales. Given the nature of its component subscales, MEC assesses critical self-evaluation in addition to perceptions of parentally influenced perfectionism. In contrast, the Pure Personal Standards (PPS) subscale includes the Personal Standards items (5 of 7) that were believed to least reflect distress related to negative evaluation (DiBartolo, Frost, Chang, LaSota, & Grills, 2004). MEC seems to be related to indicators of poor psychological functioning such as self-concealment and depression (DiBartolo, Li, & Frost, 2008), whereas PPS has demonstrated relationships with healthy psychological functioning (DiBartolo et al., 2004), but not depression or anxiety (DiBartolo et al., 2008).

To reduce the impact of idiosyncratic measurement by one measure, an additional reliable and valid perfectionism scale was utilized. The Almost Perfect Scale-Revised (APS-R; Slaney et al., 2001) was designed to measure both maladaptive (Discrepancy subscale) and adaptive (High Standards and Order subscales) elements of perfectionism. Maladaptive perfectionism is considered an individual's distress involving perceived failure to meet objectives, whereas adaptive perfectionism involves perfectionistic thoughts and actions that one maintains because of their perceived value (Slaney, Rice, &

Ashby, 2002). The Discrepancy subscale assesses how far apart high standards and eventual outcomes tend to be (e.g., "I am seldom able to meet my own high standards for performance"). It can also be considered a measure of critical self-evaluation. Rice and Ashby (2007) classify individuals who score highly on the Discrepancy and High Standards subscales as maladaptive perfectionists. In this manner, maladaptive perfectionists are similar to the unhealthy perfectionists that Stoeber and Otto (2006) describe.

Although Hewitt and Flett's Maladaptive Perfectionism Scale (HFMPS) is a reliable, valid, and commonly utilized measure, it was not used in the present study due to the fact that it was designed to assess intrapersonal and interpersonal aspects of perfectionism, rather than differentiate maladaptive and adaptive perfectionism (Hewitt & Flett, 1991). The interpersonal context of perfectionism is not relevant to this investigation because participants made ratings about personal performance and evaluation was not public. Given that the FMPS and APS-R more explicitly measure maladaptive and adaptive aspects of perfectionism at the subscale-level, an additional multidimensional measure would involve additional participant burden with minimal incremental value.

In multiple studies, adaptive and maladaptive perfectionism subscales have been found to relate to personality factors, particularly neuroticism and conscientiousness. Cox, Enns, and Clara (2002) observed a significant relationship between a maladaptive perfectionism composite, which consisted of subscales from the FMPS (e.g., Doubts about Actions) and HFMPS, and neuroticism in an undergraduate sample and a sample of adults seeking outpatient treatment for mood disorders. These researchers also found that

an adaptive perfectionism composite, consisting of FMPS (e.g., Personal Standards) and HFMPS subscales, was significantly correlated with conscientiousness in the same clinical and undergraduate samples (Cox et al.). Similarly, Stumpf and Parker (2000) found that a maladaptive perfectionism factor (e.g., Doubts about Actions, Concern over Mistakes) was significantly correlated with neuroticism in samples of 6th graders and undergraduates, whereas an adaptive perfectionism factor (e.g., Personal Standards) was related to conscientiousness. In two undergraduate samples, Rice, Ashby, and Slaney (2007) observed significant relationships between High Standards and conscientiousness, and Discrepancy and neuroticism. Discrepancy, Concern over Mistakes, and Doubts about Actions were also negatively correlated with conscientiousness (Rice et al.).

Perfectionism and Psychological Symptoms

Perfectionistic individuals often experience symptoms of mental disorders and may have poorer responses to psychological treatments than non-perfectionists. For example, perfectionism can impede treatment for depression, perhaps by limiting the quality of interactions between therapist and client (e.g., Blatt, Zuroff, Bondi, Sanislow, & Pilkonis, 1998; Zuroff et al., 2000). The extent to which one's symptoms (e.g., compulsive cleaning) overlap with the focus of perfectionism (e.g., organization) may predict additional treatment difficulties. Shafran and colleagues (2002) claim that eating disorders are different from other mental disorders in relation to perfectionism in that they may not represent unique constructs. Instead, it is suggested that perfectionism regarding eating and body image can result in bulimia nervosa or anorexia nervosa (Shafran et al.). Perfectionism can be considered a key component of the diagnostic description of eating disorders, particularly anorexia nervosa (e.g., Vitousek & Manke,

1994), and seems to be a mechanism by which eating disorders are maintained (e.g., Slade, 1982). Another way that eating disorders could be considered unique from other disorders is the higher scores individuals with eating disorders obtain on self-oriented perfectionism and personal standards subscales (for a review, see Shafran et al.). In addition, some evidence suggests that perfectionism is a risk factor for anorexia nervosa (e.g., Fairburn, Cooper, Doll, & Welch, 1999; Fairburn, Shafran, & Cooper, 1999; Lilenfeld et al., 1998) and bulimia nervosa (e.g., Fairburn, Welch, Doll, Davies, & O'Connor, 1997; Lilenfeld et al., 2000). There is mixed evidence regarding the extent to which eating disorders become more difficult to treat when perfectionism levels are elevated (e.g., Mussell et al., 2000).

Perfectionism is included in the 4th edition of the Diagnostic and Statistical Manual of Mental Disorders (*DSM-IV*; American Psychiatric Association, 1994) as a symptom of obsessive-compulsive personality disorder (OCPD). OCPD has been found to have genetic risk factors, which could include perfectionism, in common with anorexia nervosa (e.g., Lilenfeld et al., 1998). Although the diagnostic criteria for OCPD are similar to aspects of clinical perfectionism, not everyone diagnosed with OCPD can be considered a perfectionist (Shafran et al., 2002). According to *DSM-IV*, someone is eligible for a diagnosis of OCPD if they have at least 4 of 8 symptoms, of which only one specifically mentions dysfunctional perfectionism.

Perfectionism is also relevant to the experience of problematic anxiety. According to the Obsessive Compulsive Cognitions Working Group (1997), perfectionism in the context of obsessive-compulsive disorder (OCD) involves "the tendency to believe there is a perfect solution to every problem, that doing something perfectly (i.e., mistake free)

is not only possible, but also necessary, and that even minor mistakes will have serious consequences" (p. 678). Individuals with anxiety disorders tend to have higher scores than controls on multiple perfectionism subscales (for a review, see Antony, Purdon, Huta, & Swinson, 1998). For example, concern over mistakes is related to social anxiety disorder (e.g., Juster et al., 1996; Saboonchi, Lundh, & Ost, 1999). However, recent evidence suggests that perfectionistic striving may not be as strongly related to social anxiety as was once thought, and social anxiety may sometimes be related to setting lower standards (Shumaker & Rodebaugh, 2009). Shumaker and Rodebaugh's findings suggest that perceived difficulty achieving standards and the absence of high standards contribute to psychological dysfunction in the form of social anxiety.

Perfectionism and Behavioral Tasks

Several tasks, including ones emphasizing evaluation, have been used in investigations of perfectionism. For this dissertation, the experimental task was designed to activate negative affect (e.g., frustration), increase state anxiety, and impair performance to a greater extent for individuals with higher levels of maladaptive perfectionism. To provide immediate scoring and recording of response times, it was preferable for the task to be computerized.

This study employed a letter search task because a similar design was used in multiple investigations involving perfectionism (Rhéaume et al., 2000; Slade, Newton, Butler, & Murphy, 1991; Stoeber, Chesterman, & Tarn, 2010). A detailed description is provided in the Method section. Although other existing or future tasks could prove to be more relevant to perfectionism, this task has several merits and modifications in the present study were intended to enhance its ability to evoke affective responses among

individuals with elevated levels of maladaptive perfectionism. Based on findings from Kobori and Tanno (2005), the task could arouse more momentary negative affect if the objective is framed in terms of avoidance (i.e., minimize number of errors). In addition, the task is likely to have greater effects involving maladaptive perfectionism (e.g., concern about mistakes) if mistakes are more frequent (Frost, Turcotte, Heimberg, & Mattia, 1995). Thus, this study utilized a letter search task of seemingly greater difficulty than those used in prior research.

Rhéaume et al. (2000) included three behavioral tasks in a study testing the relationships between compulsive behavior and adaptive and maladaptive perfectionism. Their probabilistic inference task involved having each participant decide which of two bags containing 100 black and white marbles had a greater number of black marbles (one had 60 white marbles and one had 60 black marbles). Participants were allowed to count as many marbles as they wanted before making their decision (Rhéaume et al.). Thus, an opportunity for perseveration was provided because counting more marbles improved the likelihood of responding correctly. A cancellation task, which involved time-limited trials of searching for a target letter among a page of distracting letters, and an anagrams task were also administered. For the anagrams task, participants had 2 minutes to determine the word that combinations of scrambled letters formed as difficulty increased gradually. By having two minutes of inactivity and ratings about the recent anagrams after two successive errors, the anagrams task afforded a good opportunity for post-event processing, which may have heightened post-task negative activated affect (Rhéaume et al.).

Rhéaume and colleagues (2000) found that maladaptive perfectionists took longer during the cancellation task than did adaptive perfectionists, and adaptive perfectionists delayed their decision until they had a significantly greater difference between black and white marbles during the probabilistic inference task than did maladaptive perfectionists. This finding could suggest that maladaptive perfectionists wished to terminate participation in the task sooner because they found the uncertainty more distressing than did adaptive perfectionists (Rhéaume et al.). Thus, the cancellation task seems more promising in terms of relevance to maladaptive perfectionism because performance is less likely to be biased by desire for early termination. Compared to adaptive perfectionists, maladaptive perfectionists did not think to a greater extent about their mistakes on the anagrams task than they did thinking about how to solve the anagrams during the two-minute delay after consecutive mistakes (Rhéaume et al.).

Stoeber et al. (2010) utilized a task similar to Rhéaume et al.'s (2000) cancellation task. For each of 100 slides presented on a computer monitor, participants were instructed to hit a certain key if a screen of 25 letters and numbers, presented in 5 rows and 5 columns, contained the letter E; otherwise they were supposed to press a different key. Response times and accuracy were recorded on the computer, and participants were told to maximize accuracy and speed. After the task, participants responded using a Likert-type scale to questions presented on the screen about how much effort was put into both responding quickly and responding accurately (Stoeber et al.). Adaptive perfectionism was measured using the Striving for Perfection Scale (Stoeber & Rambow, 2007), a five-item measure of pursuing perfection that was reported to be valid and reliable, whereas maladaptive perfectionism was measured using the Concern over Mistakes subscale from

the FMPS (Stoeber et al.). Perfectionistic striving was significantly correlated with response time and accuracy, whereas Concern over Mistakes was not significantly associated with response time or accuracy (Stoeber et al.). This contrasts with theories suggesting that performance anxiety can impair performance (for a review, see Eysenck, Derakshan, Santos, & Calvo, 2007). Although this dissertation may also not find a significant relationship between a measure of maladaptive perfectionism and task performance, alterations in the way the task is presented could result in different outcomes. For instance, the task was modified to be more difficult, and concerns about mistakes were heightened via manipulation of mistake costs and instruction to minimize errors.

Stoeber and colleagues (2010) also found that response time completely mediated the relationship between perfectionistic striving and performance. Individuals scoring highly on perfectionistic striving were found to exert greater effort towards accuracy, rather than speed, than did those low in perfectionistic striving. These authors conclude that delayed responding is the way in which individuals who score highly on perfectionistic strivings achieve superior outcomes on tasks without time limits (Stoeber et al.). Performance on timed tasks (e.g., aptitude tests, exams) tends to be better for those higher in perfectionistic striving, but it seems that processes such as greater effort and having loftier objectives, rather than delayed responding, account for such differences (for a review, see Stoeber et al.). Arguably, a task that forces greater trade-offs between accuracy and speed would produce more distress, and perhaps poorer performance, among individuals with excessively high standards. If one assumes that daily life presents many decisions, some of which are time-limited, and delayed responding often results in

negative consequences (e.g., missed opportunities, inconveniencing others) of varying severity, a task that rewards efficiency would be a better test of the typical experience of perfectionists for brief tasks.

Slade et al. (1991) studied how levels of perfectionism and dissatisfaction affected performance on a computerized visual search task. Slade and colleagues found that individuals with high perfectionism scores, as measured by an eight-item subscale from the Setting Conditions for Anorexia Nervosa Scale, performed better on a letter search task without taking longer to complete the task. Although higher perfectionism scores were significantly correlated with task accuracy (Slade et al.), the use of a unidimensional and seldom-used measure of perfectionism complicates interpretation. The findings could be attributed to elevated levels of maladaptive perfectionism, adaptive perfectionism, or both (see Stoeber et al., 2010).

Frost and Marten (1990) conducted an early investigation of the relationship between subscales of the FMPS and experience performing a brief task. Their task involved paraphrasing a short passage, and responses were rated based on how well they conveyed the original meaning of the passage. There were two conditions: high perceived evaluation (i.e., participants led to believe their responses would be scrutinized and compared to norms) and low perceived evaluation (Frost & Marten). These authors found that female undergraduates with high FMPS scores considered the brief writing task significantly more important than did low-perfectionism participants. High-perfectionism participants were also less satisfied with their performance, felt more negative activated affect leading up to and during the task, and performed worse than low-perfectionism participants. In addition, Frost and Marten found that performance was worse in the high

evaluation condition, and high-perfectionists had higher negative activated affect than low-perfectionists in this condition. It has been suggested that perfectionists may have a lower threshold for perceived level of evaluation, which leads to growing concerns about the costs of failure or the likelihood of success (Frost & Marten). Naturally, this thought process is likely to exacerbate negative activated affect regarding tasks (for a review, see Frost & Marten). These findings should be interpreted cautiously because a total perfectionism score was used for analyses, rather than subscales representing maladaptive and adaptive perfectionism. Further, neuroticism was not measured, so it is unclear whether the findings could be more parsimoniously attributed to neuroticism. Due to the high variability in experience and skill with writing, as well as practical issues pertaining to the subjectivity of scoring, a writing task is not ideal as an efficient, perfectionism-related task.

A more recent investigation examined the impact of perfectionistic strivings on performance during a proofreading task. Stoeber and Eysenck (2008) explored the impact of adaptive perfectionism (APS-R's High Standards subscale) and maladaptive perfectionism (APS-R's Discrepancy subscale) on performance for a timed proofreading task. This task involved indicating for each of approximately 100 lines of text if any errors were committed in terms of grammar, spelling, or American Psychological Association Publication Manual (Fifth Edition) style (APA, 2001). Response bias was defined as the tendency to avoid reporting valid errors through analysis of correct versus false positive responses, and efficiency was calculated by dividing the number of correct responses by task time (Stoeber & Eysenck). Stoeber and Eysenck found that individuals scoring highly on High Standards (i.e., perfectionistic strivings) did not perform better on

the task, but perfectionistic strivings was positively associated with number of false positives (e.g., incorrectly indicating that there was a spelling error on a line) and negatively correlated with efficiency (i.e., number of correct responses per minute). Once the variance in High Standards was accounted for, Discrepancy demonstrated a significant negative partial correlation with number of correct responses and a positive partial correlation with response bias (i.e., cautious responding). When Discrepancy was accounted for, elevated High Standards scores predicted less proofreading efficiency (Stoeber & Eysenck).

Thus, Discrepancy seems to be related to an inhibitory response style, whereas High Standards seems to be related to an approach tendency (Stoeber & Eysenck, 2008). As these researchers note, these findings are consistent with Kobori and Tanno's (2005) report of relationships between adaptive and maladaptive perfectionism and approach and avoidance tendencies (e.g., Higgins & Silberman, 1998), respectively. Limitations of the study include only defining effort as time to completion, not assessing personality constructs related to perfectionism (e.g., neuroticism, conscientiousness; Rice et al., 2007), and not providing participants with immediate performance feedback. These authors concluded that the proofreading task was not suitable to carefully test their hypothesis (perfectionistic strivers would take longer on the task and perform better) because performance seemed too dependent upon prior knowledge, rather than standard setting (Stoeber & Eysenck).

A Stroop task has been used in perfectionism research regarding the effects of approach versus avoidance goals on activated affect (Kobori & Tanno, 2005), and the extent to which successful outcomes lead perfectionists to raise standards (Kobori et al.,

2009). In a sample of Japanese undergraduates, Kobori and Tanno found that a measure of personal standards cognitions mediated the relationship between self-oriented perfectionism and positive affect for the condition in which participants were instructed to approach achieving a minimum number of correct responses. A measure of cognitions involving concern about mistakes was a mediator between self-oriented perfectionism and negative affect, particularly when avoidance of missing more than a certain number of items was encouraged (Kobori & Tanno). In another investigation of Japanese undergraduates, Kobori et al. observed that self-oriented perfectionism predicted selection of the more difficult of two avoidance goals (missing less than a specified number of items) for a second Stroop task after meeting the initial goal, whereas performance and affect for the first task did not significantly predict subsequent goal selection.

Frost et al. (1995) also utilized a Stroop task in a study investigating affective and cognitive responses of female undergraduates with high or low Concern over Mistakes scores. A frequent-mistakes condition involved identifying colors of words that spelled discrepant colors, whereas an infrequent-mistakes condition entailed identifying colors of non-word letter strings (Frost et al.). In addition, participants were randomly assigned to either have greater evaluative threat (experimenter able to view computer screen) or less evaluative threat (experimenter in adjacent room). Frost and colleagues found that presence of the experimenter did not affect ratings, the more challenging task took longer and more effort, and the more challenging task evoked more negative activated affect, less confidence, and more concern about negative evaluation. Surprisingly, Concern over Mistakes did not influence completion time or perceptions of good performance, average

performance, or one's own performance (Frost et al.). Individuals with high Concern over Mistakes scores experienced significantly more negative activated affect for the more challenging task, and significant changes in negative affect from the easier to the more difficult task, than did those with low Concern over Mistakes scores (Frost et al.). These authors also observed significantly greater perceptions among high Concern over Mistakes versus low Concern over Mistakes participants that they "should have done better" on the tasks and that others would judge them to be less intelligent based on difficult task performance (p. 202). However, participants did not receive performance feedback and accuracy was not measured, so it is unclear how accurate perceptions of performance were and how they impacted post-task ratings. Overall, these findings suggest that tasks involving frequent mistakes tend to generate negative affective and self-evaluative responses from individuals with elevated Concern over Mistakes, even though these individuals do not perceive that they have made more mistakes than individuals with low Concern over Mistakes (Frost et al.).

Additional computerized tasks have been used in studies of perfectionism. Two studies used a choice reaction time task and provided performance feedback that was independent of actual performance (Besser et al., 2004; Besser, Flett, Hewitt, & Guez, 2008). The choice reaction time task has primarily been applied to investigations of information encoding and involves pressing one of several buttons that each correspond to a highlighted box on a computer monitor, and then continuing to press the appropriate button quickly and accurately as new boxes are highlighted in random order for 3 minutes (Besser et al., 2008). In Besser et al.'s (2008) experiment, participants were randomly assigned to conditions varying in terms of task difficulty (medium or hard) and feedback

(above average, below average). When negative feedback was provided or when actual performance was low for the task, Besser et al. (2008) found that socially prescribed perfectionism (i.e., perception of perfectionistic standards imposed by others on oneself) predicted negative activated affect and worse self-perceptions. In contrast, Besser et al. (2004) found that self-oriented perfectionism tended to predict similar variables. In the presence of low confidence and frequent mistakes, socially prescribed perfectionism predicted lower state self-esteem after the task (Besser et al., 2008). Thus, relationships between HFMPS measures and reactions to performance on a choice reaction time task are inconsistent.

Some research regarding perfectionism and task performance has combined unconventional forms of measurement (e.g., projective) with self-report. Stoeber, Harris, and Moon (2007) tested the relationships among High Standards, Discrepancy, certain activated emotions (pride, shame, guilt), and perceived performance on the Multi-Motive Grid (Sokolowski, Schmalt, Langens, & Puca, 2000), a measure designed to assess one's level of approach and avoidance for power, affiliation, and achievement using projective and self-report ratings. The task involves rating whether or not statements for each of several pictures accurately represent what the characters in the pictures seem to be thinking or feeling. For Stoeber et al.'s study, participants were led to believe that this task is related to intelligence and success in life, and were randomly assigned to receive either misleading positive or negative feedback regarding their performance. These authors found that healthy perfectionists (above average High Standards, below average Discrepancy) experienced more pride, as well as less guilt and shame, than did unhealthy (above average High Standards and Discrepancy) and non-perfectionists (below average

High Standards and Discrepancy) in response to both positive and negative feedback. Other studies have used different non-computerized tasks to investigate the effects of perfectionism.

Stoeber and colleagues (2008) investigated the relationship between a perfectionistic striving measure and aptitude test performance. Perfectionistic striving did not significantly predict performance on items from Raven's Advanced Progressive Matrices, but it was related to difficulty level selected for a test and self-efficacy (once self-criticism was entered into the model) prior to misleading feedback (Stoeber et al.). This task involves deciding which of several answer choices best completes the missing piece of a design. Similar to results obtained by Kobori et al. (2009), these authors found that when participants were told they had performed better than the majority of a norm group, even if they had not, perfectionistic striving significantly predicted raising standards for the second trial. Self-criticism, which was measured using a three-item subscale from the revised Attitudes Toward Self Scale and considered a measure of maladaptive perfectionism, was negatively correlated with pre-feedback self-efficacy and predicted lower self-efficacy when participants were told they had performed worse than the majority of a norm group, even if they had not (Stoeber et al.). Stoeber and colleagues also reported that self-criticism was significantly correlated with perfectionistic striving and it predicted decreases in standards from the first test to the second for both forms of feedback.

Some studies have investigated the contributions of perfectionism to behavioral outcomes over a period of time. Bieling, Israeli, Smith, and Antony (2003) studied how perfectionism affects academic performance by obtaining measures (FMPS, HFMPS,

affect, exam perceptions) a week before an exam in an undergraduate psychology course, and a week after students were informed of their grades. High maladaptive perfectionism was associated with expecting higher performance on the exam, less success meeting one's objective, and higher negative activated affect (Bieling et al.). Similarly, high scores on Concern over Mistakes have been found to predict difficulties in an academic setting such as more negative activated affect prior to an exam (Brown et al., 1999).

A public speaking task has been used to investigate the effects of evaluative threat on distress and performance among perfectionists. DiBartolo, Frost, Dixon, and Almodovar (2001) had female undergraduates complete a brief public speaking task to an audience consisting of a few people. They found that individuals who scored highly on Concern over Mistakes experienced significantly more negative activated affect and expectations of negative outcomes than did individuals low in Concern over Mistakes, even though observer ratings of perceived anxiety and speech quality were comparable for the two groups (DiBartolo et al.). In an unpublished study of the relationship between perfectionism and social anxiety, Shumaker and Rodebaugh's (2011) participants completed a three-minute public speaking task, which was recorded and rated for quality of content and presentation by independent raters. An experimenter was in the room for the duration of the task and a wall-mounted video camera was treated as the audience. Although a composite measure of maladaptive perfectionism, consisting of subscales from the FMPS and APS-R, significantly predicted anticipatory and performance anxiety for the speech, it did not predict beyond trait social anxiety. It seems a speech task does not strongly influence perfectionists, leaving the possibility that other tasks are more relevant.

In sum, there is no consensus regarding what type of behavioral task is most valid as an indicator of perfectionism. Multiple tasks, including several computerized ones, have been administered to individuals with high levels of adaptive or maladaptive perfectionism. Maladaptive perfectionism generally seems to be more predictive of negative outcomes and experiences (e.g., more negative activated affect, less self-efficacy, less efficiency), particularly for more difficult tasks and when feedback is negative. Clear rationales for task selection have rarely been provided and few studies have investigated the contributions of other personality constructs (e.g., neuroticism, conscientiousness) or manipulated the cost of mistakes. Given that multiple studies have provided participants with misleading feedback (e.g., Kobori et al., 2009), there is arguably a need to explore participant responses to genuine feedback provided immediately after performance. By assessing key personality factors, the present study also addresses concerns regarding the extent to which findings for different measures of perfectionism can be attributed to higher order personality constructs such as conscientiousness (e.g., Flett & Hewitt, 2006) and neuroticism.

Theoretical Rationale

Models based on Cognitive Behavioral Therapy (CBT) for treating perfectionism have been developed (e.g., Antony & Swinson, 2009; Ferguson & Rodway, 1994). Based on their conceptualization of clinical perfectionism, Shafran and colleagues (2002) contend that treating perfectionism should involve the following: (a) client understanding of the problematic nature of perfectionism and the CBT model of perfectionism maintenance, (b) development of a treatment plan with goals such as greater flexibility in self-evaluation, (c) testing of assumptions about perfectionism through exposures, and (d)

using cognitive interventions (e.g., cognitive restructuring) to improve self-evaluation and make standards more realistic. Techniques that have been utilized for tasks such as improving self-esteem (e.g., Fennell, 1998), reducing intolerance of uncertainty (e.g., Freeston et al., 1997), or treating specific disorders may be applicable to treating aspects of perfectionism (see Shafran et al.).

Although this approach seems promising, adequate investigations of interventions for perfectionism-related distress should determine which types of behavioral tasks are most relevant to perfectionism. These tasks could be an essential part of initial exposures and hypothesis testing (i.e., behavioral experiments) in a CBT protocol for perfectionism. In addition, brief tasks that reliably heighten perfectionistic concerns could be useful in assessing levels of perfectionism and estimating concomitant impairment. For example, a task could measure the lengths to which someone goes (e.g., delay in responding) to avoid making mistakes. The present study will investigate the relationships between perfectionism and task-related measures (e.g., performance, negative activated affect) when mistake cost is varied for a letter search task. Thus, there will be two conditions: high cost of errors and low cost of errors in terms of points awarded (or deducted) per trial. Letter search tasks have been used in prior perfectionism research (Rhéaume et al., 2000; Slade et al., 1991; Stoeber et al., 2010) in which accuracy was emphasized. The version of the letter search task in the present study was designed to be more difficult, include greater accuracy and speed demands, and provide immediate performance feedback. In order to make perfect performance, a feat which is arguably quite rare in daily life, more difficult, arrays larger than those utilized by Stoeber et al. (5 rows, 5 columns; accuracy: $M = 91.64\%$, $SD = 5.02$) were presented to try to produce lower mean

performance and greater variability. A more difficult task also seems preferable given findings that higher difficulty computer tasks produce more negative activated affect and self-criticism among maladaptive perfectionists (e.g., Frost et al., 1995).

In addition, the different conditions clarify the extent to which mistake accentuation is relevant to perfectionism. The variations of the task are explained at length in the Method section. Another important addition to the perfectionism and task experience literature is testing the extent to which higher order personality factors (e.g., neuroticism, conscientiousness) account for the relationship between components of perfectionism and task-related variables (e.g., performance, negative activated affect).

Primary Hypotheses

Hypothesis 1. Maladaptive perfectionism will significantly predict performance for the high-cost condition when it is presented first or second.

Given that fear of failure is thought to be a key aspect of perfectionism, this investigation will manipulate how costly mistakes are during a laboratory task. Based on Rhéaume et al.'s (2000) finding that higher maladaptive perfectionism scores were associated with longer task engagement, participants with higher maladaptive perfectionism scores should delay responding in an effort to avoid making mistakes, and this will result in greater decrement to scores in the high-cost condition. The version of the letter search task that most penalizes failures should produce the most perseveration among participants with elevated levels of maladaptive perfectionism. The letter search task utilized in this study, however, penalized delayed responding because participants had the opportunity to complete as many trials as they could during a set period of time, and delayed responding resulted in fewer opportunities to add to the point total for each

condition. In addition, prior research suggests that higher anxiety may lead to equivalent performance when more effort is exerted, but this entails less efficiency (e.g., Eysenck & Calvo, 1992). Thus, if maladaptive perfectionists experience more state anxiety during the version of the task with higher cost mistakes, their performance should be more impaired on the time-limited task.

Hypothesis 2. Adaptive perfectionism will significantly predict performance for the low-cost condition when it is presented first or second, but not beyond conscientiousness.

Stoeber et al. (2010) demonstrated that time to respond on a letter search task fully mediated the relationship between perfectionistic striving and accuracy, so it is hypothesized that this tendency will result in higher scores for individuals with higher levels of adaptive perfectionism, particularly for the low cost condition. Stoeber and colleagues did not measure conscientiousness. Given the large overlap between conscientiousness and adaptive perfectionism (e.g., Cox et al., 2002; Stumpf & Parker, 2000; Rice et al., 2007), it is hypothesized that adaptive perfectionism will no longer predict performance with conscientiousness in the model, and conscientiousness may significantly predict performance independent of adaptive perfectionism.

Hypothesis 3. Maladaptive perfectionism scores will significantly predict negative activated affect and state anxiety immediately before and after the high-cost condition when it occurs first or second, but not once neuroticism is included in the model.

Given the pervasive fear of mistakes common to many conceptualizations of perfectionism, one would expect that maladaptive perfectionists may "feel anxious,

confused and emotionally drained before a new task even begins" (Hamachek, 1978, p. 28). The relationship between perfectionism and performance anxiety indicates that perfectionists may often experience heightened anticipatory anxiety (e.g., Burns, 1980). Frost and Marten (1990) suggest that pre- and post-task negative activated affect may be proportional to the extent to which the task involves evaluation. However, given findings that maladaptive perfectionism may not display incremental validity beyond trait measures such as neuroticism in predicting state anxiety and activated negative affect for a speech (Shumaker & Rodebaugh, 2011), it is expected that a similar finding will be obtained in the context of a letter search task.

Hypothesis 4. Higher maladaptive perfectionism scores will significantly predict more distress (e.g., frustration), less satisfaction, less confidence for future performance, and less enjoyment for the high-cost condition when it appears first or second.

Given that the high-cost condition is more likely than the low-cost condition to heighten concerns regarding mistakes, it should be associated with more distress, less satisfaction, and less enjoyment before and after it is completed. It has been suggested that perfectionism is associated with dissatisfaction and perceptions that one should have done better after performances (e.g., Burns, 1980); however, some findings have been inconsistent (e.g., Frost & Marten, 1990). Stoeber et al. (2008) found that self-criticism, which is considered a key aspect of maladaptive perfectionism, was negatively related to self-efficacy after an aptitude test and predicted lower self-efficacy following misleading, negative feedback about performance relative to others.

Ancillary Research Questions

Given prior findings of a nonsignificant or negative relationship between adaptive perfectionism and social anxiety (Shumaker & Rodebaugh, 2009), which contrast with theories about high standards and social anxiety (e.g., Clark & Wells, 1995), this dissertation will clarify the relationship between social anxiety and adaptive perfectionism. In addition, informant (aggregated across up to 3 friends and 2 parents for each participant) versus self-report will be compared for select perfectionism subscales and Big Five factors of personality. Given that traits involving internal states (e.g., neuroticism) are less observable and less accurately rated by others (for a review, see Vazire, 2010), we hypothesize that informants will rate conscientiousness and adaptive perfectionism more accurately than neuroticism and maladaptive perfectionism. Based on findings associating maladaptive perfectionism with neuroticism and adaptive perfectionism with conscientiousness (e.g., Cox et al., 2002), a significant correlation for each set of measures should be obtained in the present study.

Method

Participants

Participants were undergraduates ($N = 133$) recruited from the Psychology Participant Pool at Washington University. In exchange for up to an hour of participation, each participant received one research credit and was entered into a raffle for a prize ($50 gift certificate). The presence of a raffle was intended to motivate task performance, rather than induce participation through advertisement, so participants were not informed about the raffle until the informed consent process. The probability that a participant would win the prize changed slightly based upon how far his or her cumulative performance on the tasks deviated from the sample's average performance. The total

number of points earned for each participant equaled the number of tickets they had entered into the raffle, and a computer function was used to select the winner. The winner received a $50 gift code via email soon after data collection was completed. There were no exclusion criteria because we wished to maximize the variability for the continuous variables under investigation. Individuals under age 18 were permitted to participate, but their data were destroyed. This policy of the participant pool is intended to provide educational participation opportunities for minors without obtaining consent or data retention.

Measures

Demographic Variables

To test for effects stemming from demographic characteristics, we requested each participant's age, gender, and ethnicity.

Perfectionism

The Frost Multidimensional Perfectionism Scale (FMPS; Frost, Marten, Lahart, & Rosenblate, 1990). The FMPS literature has been reviewed in more detail in the Introduction. The Maladaptive Evaluative Concerns (MEC) subscale is the sum of all items from Concern over Mistakes, Doubts about Actions, Parental Criticism, and Parental Expectations. The Pure Personal Standards (PPS) subscale consists of five items from the original Personal Standards subscale (e.g., "I set higher goals for myself than most people") that are believed to overlap less with MEC than Personal Standards does (DiBartolo et al., 2004). In this sample, internal consistency was excellent for MEC (α = .92) and Organization (α = .95), and very good for PPS (α = .87).

The Almost Perfect Scale-Revised (APS-R; Slaney, Rice, Mobley, Trippi, & Ashby, 2001). The APS-R contains three subscales: Discrepancy (12 items), High Standards (7 items), and Order (4 items). This scale uses a Likert-type scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). The APS-R has good convergent validity and reliability (Rice & Ashby, 2007). Slaney et al. found a significant correlation between Discrepancy and the FMPS's Concern over Mistakes and Doubts about Actions subscales. Please refer to the Introduction for a more thorough review of the APS-R literature. In this sample, internal consistency was very good for High Standards (α = .82) and Order (α = .86), and excellent for Discrepancy (α = .95).

Additional Personality Traits

International Personality Item Pool (IPIP; Goldberg, 1999) items. Thirty-nine items assessing facets for conscientiousness and neuroticism were used to more precisely measure the factors most closely related to multiple measures of adaptive and maladaptive perfectionism (for a review, see Rice et al., 2007). The items used were identified by Yarkoni (2010) as efficient indicators of facets of the Big Five factors mentioned above. Although internal consistencies were lower than what would be considered acceptable for longer measures (αs from .34 to .69), the facets demonstrated very good convergent validity and internal consistency may underestimate reliability for brief measures such as these (for a review, see Yarkoni). Informants rated IPIP items from the Mini-IPIP (Donnellan, Oswald, Baird, & Lucas, 2006) for conscientiousness and neuroticism. The Mini-IPIP is a 20-item measure of the Big Five factors derived from Goldberg's 50-item International Personality Item Pool – Five Factor Model measure. Donnellan et al. found the reliability and validity of the Mini-IPIP to be nearly

as good as that of the original measure. For each IPIP item (e.g., "rarely worry"), participants rate how accurately each item characterizes them on a scale from 1 (*very inaccurate*) to 5 (*very accurate*). In this sample, internal consistency was very good for conscientiousness (α = .86; 22 items) and neuroticism (α = .83; 20 items).

Multi-source Assessment of Personality Pathology (MAPP; Oltmanns & Turkheimer, 2006) items. The MAPP consists of 103 items assessing features of 10 *DSM-IV* personality disorders and additional traits, with phrasing designed to be accessible to a broad audience. The items are typically presented on a computer screen in a somewhat randomized order, and participants are instructed to rate a particular individual on each item using a Likert-type scale from 0 (*never like this, 0% of the time*) to 4 (*always like this, 100% of the time*). Given this study's focus, only items from the following personality disorders most related to perfectionism were rated by informants: narcissistic (e.g., "Being noticed and/or admired by others is important to me") and obsessive-compulsive (e.g., "I am a perfectionist and my perfectionism gets in the way of getting things done").

Affective and Psychological Symptom Measures

Positive and Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988). The PANAS contains 20 items, each of which is an adjective associated with either positive or negative affect. Internal consistencies for both the positive and negative factors have been found to range from .84 to .90, even when respondents were asked to rate their mood across time periods as varied as a moment to a year or more (Watson et al.). In addition, the PANAS has demonstrated excellent convergent and discriminant validity. Participants rated the extent to which each of the ten positive (e.g., "interested")

and ten negative adjectives (e.g., "upset") described how they felt on a scale from 1 (*very slightly or not at all*) to 5 (*extremely*). Activated affect measures from before and after both conditions of the letter search task were combined with related state measures as described below.

The Brief State Anxiety Measure (BSAM; Berg, Shapiro, Chambless, & Ahrens, 1998). The BSAM contains 6 of the original 20 items (i.e., relaxed, steady, strained, comfortable, worried, and tense) of the State-Trait Anxiety Inventory (STAI; Spielberger, 1983). Berg et al. reported that Berg developed this measure in unpublished pilot work, in which it showed a high correlation with the full STAI (r = .93).

Subjective Units of Distress Scale (SUDS; Wolpe, 1988). SUDS ratings can range from 0 (completely calm) to 100 (highest anxiety felt or imagined). Other reference points include 25 (noticeable, but not bothersome anxiety), 50 (bothersome anxiety), and 75 (very bothersome anxiety).

Composite Perfectionism and Distress Measures. The reliability of each composite was estimated as described by Nunnally and Bernstein (1994). MEC and Discrepancy formed the maladaptive perfectionism composite (r = .96), whereas PPS and High Standards formed the adaptive composite (r = .90). The anticipatory distress composite consisted of pre-task ratings for the SUDS, BSAM, and negative affect (NA) subscale of the PANAS (task 1: α = .68; task 2: α = .80). Given that single item measures such as the SUDS have unknown internal consistency, reliability could not be estimated for the anticipatory distress composite. Note that Cronbach's alpha is an underestimate of the internal consistency of this composite measure because it does not take into account the internal consistency of the BSAM and NA subscale. The performance distress

composite consisted of post-task SUDS (SUDS after the task and estimate of highest SUDS during the task), BSAM, and NA ratings immediately after the task (task 1: r = .85; task 2: r = .86).

The Social Interaction Anxiety Scale (SIAS; Mattick & Clarke, 1998). The SIAS is a 20-item measure employing a 0 (*not at all*) to 4 (*extremely*) Likert-type scale. The items describe anxious reactions to a variety of social interaction situations. Research on the scale suggests good to excellent reliability and good construct and convergent validity (for a review, see Heimberg & Turk, 2002). For the present study, the reverse-scored items were omitted from statistical analyses. Available evidence suggests that these items fail to load on the same factor as the other items (Rodebaugh, Woods, Heimberg, Liebowitz, & Schneier, 2006) and appear less related to social anxiety and more related to extraversion than is desirable (Rodebaugh, Woods, & Heimberg, 2007). In this sample, internal consistency for the straightforward-total SIAS items was very good (α = .89; 17 items).

Performance Ratings

All task-specific ratings, except for self-efficacy (i.e., task confidence), were measured using Adaptive Visual Analog Scales (AVAS; Marsh-Richard, Hatzis, Mathias, Venditti, & Dougherty, 2009) on a computer. The AVAS allows visual rating of continuous self-report measures without arbitrarily selecting numeric anchors. A 0 to 100 scale was used for confidence ratings because this scale has demonstrated good reliability and validity in terms of self-efficacy for specific situations (e.g., Zane & Williams, 1993). After each task, participants were asked to rate their satisfaction regarding their performance (*not at all satisfied* to *extremely satisfied*), frustration with the task (*not at*

all frustrated to *extremely frustrated*), enjoyment of the task (*no enjoyment* to *extreme enjoyment*), and confidence in future performance of a similar task from 0 (*not at all confident*) to 100 (*extremely confident*).

Procedure

Participants completed the single-session experiment in an office suite. There were one or two participants per session. When two participants were present, they were situated in separate rooms within the office suite. The program was run on E-Prime®. Experimenters included two undergraduate research assistants and the principal investigator. First, participants read the informed consent agreement and were able to ask questions about the experiment before signing. Next, the structure of the study was briefly explained and participants completed trait measures of perfectionism, personality, and social anxiety. After the questionnaires were completed, instructions were provided for the task, including how performance was scored. Given that affect is more effectively induced by tasks of greater importance to participants (for a review, see Nummenmaa & Niemi, 2004), the task was described as an indicator of perceptual ability. In addition, participants were informed that a higher total score across the two versions of the task increased one's probability of winning the raffled prize.

Order of the two versions of the task was randomized. Before each task started, ratings of activated affect and state anxiety were obtained. After a practice round, the task began and ratings of activated affect, state anxiety, satisfaction, frustration, confidence, and enjoyment were made upon completion. This procedure applied to both versions of the task and the change in error cost was explained prior to the second condition.

The letter search task involved having a participant decide whether a target letter (green O) was present in an array (9 rows by 9 columns) of distracting letters by pressing one key to indicate that the target was present and a different key to indicate absence of the target (see Figure 1). It was a conjunction search because participants were asked to find a specific letter of a certain color (green O). Conjunction searches involve targets that differ in at least one way from distractors, and response times tend to be proportional to the number of distractors present (for a review, see Eckstein, Thomas, Palmer, & Shimozaki, 2000). Approximately half of the arrays contained the target letter. After a few practice searches, participants were able to complete as many of the letter searches as they could during the five minutes for each condition. A timer on the monitor displayed the time remaining for each condition and the participant's total score was listed at the top of the screen throughout each task. The task was similar to the one used by Stoeber et al. (2010), but was designed to be more difficult.

In addition, the number of letters appearing in a given array randomly varied from trial to trial to enhance array complexity. Participants were instructed to maximize their score while minimizing errors. Thus, the importance of avoiding mistakes was reinforced through explicit instruction and understanding of the point system. Ten points were awarded for each accurate response in both conditions. Ten points were deducted for each inaccurate response in the low cost condition, whereas fifty points were deducted for each inaccurate response in the high cost condition. Feedback (i.e., brief display of number of points earned or lost on trial) was provided after each response. Responses and response times were recorded on the computer. When both tasks were finished, a final score was listed on the computer screen.

After both versions of the task and ratings were completed, participants were given a debriefing form and could ask questions about the experiment. Each participant was asked to list the name and email address of up to three friends and two parents who would be asked to complete a brief online survey using SurveyMonkey™, which involved rating the participant's levels of perfectionism (Concern over Mistakes, PPS), neuroticism and conscientiousness using Mini-IPIP items, and personality pathology using narcissistic and obsessive-compulsive personality disorder items from the MAPP.

Data Analytic Plan

A repeated-measures general linear model (GLM) was used to test order effects and observe patterns that could be explored further with multiple regression. For regressions, predictors were centered and two-way interaction terms were included. When interactions were not significant, the interaction terms were dropped from the model to preserve power. Only significant interactions relevant to hypotheses are reported. One individual was excluded from all analyses due to difficulty understanding instructions (English was his second language), which also resulted in insufficient time to complete one of the tasks. Individuals were excluded from analyses (anticipatory distress: 3; performance distress: 1; satisfaction: 1; confidence: 1; task score: 1) for excessively weighting the regression line (SD Beta ≥ 1) (Neter, Kutner, Nachtsheim, & Wasserman, 1996).

Results

Descriptive Statistics

The sample consisted of 133 undergraduates, most of whom were women (n = 84; 63%) and White (n = 73; 55%). Other participants identified themselves as Asian or

Pacific Islander (n = 46; 35%), Hispanic (n = 5; 4%), Multiracial (n = 5; 4%), and Black (n = 3; 2%). One individual reported "not listed" for ethnicity. Ages ranged from 18 to 23 (M = 19.24, SD = 1.17). Scores on the FMPS's Maladaptive Evaluative Concerns (M = 54.08, SD = 14.72), Personal Standards (M = 23.80, SD = 5.50), and Organization (M = 21.36, SD = 5.21) subscales were slightly lower than those reported by an undergraduate sample from Rice and Ashby (2007) (M = 60.24, M = 25.39, and M = 24.53, respectively). For the APS-R, this sample's scores on Discrepancy (M = 42.32, SD = 15.71), High Standards (M = 40.86, SD = 5.40), and Order (M = 19.79, SD = 4.43) were comparable to those reported by a different undergraduate sample reported by Rice and Ashby (2007) (M = 39.80, M = 42.45, and M = 21.22, respectively). Thus, the sample for the present study exhibited normal levels of the perfectionism dimensions. Refer to Table 1 for the correlations among perfectionism subscales.

General Linear Model and Order Effects

A repeated-measures GLM was used to test for differences between high- and low-cost task measures, depending upon order of completion and covariates (adaptive and maladaptive perfectionism composites, conscientiousness, neuroticism). Bonferroni correction was used to account for multiple comparisons. Significant within-subjects effects were obtained for task type, multivariate Pillai $F(7, 104) = 18.46$, $p < .001$, and the interaction of task type with order, multivariate Pillai $F(7, 104) = 9.64$, $p < .001$. Tests of within-subjects contrasts revealed that task type (high vs. low cost) differences were significant for task score, $F(1, 110) = 98.34$, $p < .001$; performance distress, $F(1, 110) = 36.90$, $p < .001$; frustration, $F(1, 110) = 16.82$, $p < .001$; satisfaction, $F(1, 110) = 11.29$, $p = .001$; and confidence after the task, $F(1, 110) = 10.56$, $p = .002$. For the high-

cost task, performance distress and frustration were higher, whereas task scores, satisfaction, and confidence were lower.

For the interaction of task type and order, significant differences were present for task score, $F(1, 110) = 19.92$, $p < .001$, and frustration, $F(1, 110) = 16.00$, $p < .001$. Among those who completed the high-cost task first, average task score was significantly lower for the high-cost task than for the low-cost task. For those who completed the low-cost task first, average task score was also significantly lower for the high-cost task than for the low-cost task. Frustration scores were not significantly different for the high-cost and low-cost tasks among those who completed the high-cost task first. In contrast, frustration scores were significantly higher on the high-cost task versus the low-cost task for those who completed the low-cost task first. Refer to Table 2 for means and standard errors for each measure across groups. Given the presence of order effects, the hypotheses were evaluated for the first task each participant completed. For regressions involving prediction of task measures by participant scores on perfectionism measures, *n*s ranged from 62 to 67. Although this reduced power, doing so provides more clarity regarding the prediction of high- versus low-cost task measures by perfectionism dimensions.

Hypothesis 1. Maladaptive perfectionism and high-cost task performance.

Contrary to hypothesis, maladaptive perfectionism did not predict performance for the high-cost condition (part $r = .07$, $p = .576$). Maladaptive perfectionism also failed to predict performance for the low-cost task (part $r = .08$, $p = .537$).

Hypothesis 2. Adaptive perfectionism, conscientiousness, and low-cost task performance.

Given the strong relationship between conscientiousness and adaptive perfectionism ($r = .57$, $p < .001$), conscientiousness was always entered following adaptive perfectionism in regressions testing the prediction of task measures. Somewhat contrary to hypothesis, adaptive perfectionism failed to predict performance for the low-cost condition with (part $r = .04$, $p = .741$) and without conscientiousness in the model (part $r = -.04$, $p = .740$).

Post-hoc analyses for hypothesis 2. Due to potential differences for task type, this hypothesis was also tested for those who completed the high-cost task first. The interaction of adaptive perfectionism and conscientiousness predicted high-cost task performance (part $r = .29$, $p = .019$). Probing of the interaction, using Aiken and West's (1991) procedure, demonstrated that higher conscientiousness scores were associated with worse performance when adaptive perfectionism was low ($\beta = -.49$, $p = .022$), but not when adaptive perfectionism was high ($\beta = .10$, $p = .527$). There was a trend for higher adaptive perfectionism scores to be associated with worse performance at low levels of conscientiousness ($\beta = -.34$, $p = .054$), and the relationship was not significant when conscientiousness was high ($\beta = .25$, $p = .197$). Figure 2 shows that, contrary to what was expected, the combination of low conscientiousness and low adaptive perfectionism led to the best performance on the task.

Hypothesis 3. Maladaptive perfectionism, neuroticism, and distress for the high-cost task.

As hypothesized, maladaptive perfectionism predicted anticipatory distress before the high-cost task (part $r = .31$, $p = .014$), but not once neuroticism was included in the model (part $r = .04$, $p = .706$). Maladaptive perfectionism also predicted performance

distress, which was based on state anxiety and affect ratings immediately after the task, for the high-cost task (part $r = .25$, $p = .045$), but not once neuroticism was included in the model (part $r = -.06$, $p = .623$).

Post-hoc analyses for hypothesis 3. Due to potential differences for task type, this hypothesis was also tested for those who completed the low-cost task first. For the low-cost task, maladaptive perfectionism predicted anticipatory distress beyond neuroticism (part $r = .44$, $p < .001$). Maladaptive perfectionism also predicted performance distress for the low-cost task with neuroticism in the model (part $r = .35$, $p = .004$). The ability of adaptive perfectionism to predict task-related distress was tested in a separate regression. Higher adaptive perfectionism scores predicted lower anticipatory distress scores for the high-cost task (part $r = -.27$, $p = .032$), but not beyond conscientiousness (part $r = -.13$, $p = .284$).

Hypothesis 4. Maladaptive perfectionism, frustration, satisfaction, confidence, and enjoyment for the high-cost task.

For the following regressions, neuroticism and its interaction with maladaptive perfectionism were included as competing predictors, as was the case for hypotheses 1 and 3. Maladaptive perfectionism predicted less satisfaction for the high-cost task (part $r = -.26$, $p = .038$), but not beyond neuroticism (part $r = -.15$, $p = .227$). Higher maladaptive perfectionism scores predicted greater frustration for the high-cost task (part $r = .35$, $p = .004$), but not with neuroticism in the model (part $r = .20$, $p = .093$). Maladaptive perfectionism did not predict confidence after the high-cost task (part $r = -.10$, $p = .413$). Maladaptive perfectionism also failed to predict enjoyment after the high-cost task (part $r = .12$, $p = .360$).

Post-hoc analyses for hypothesis 4. Due to potential differences for task type, this hypothesis was also tested for those who completed the low-cost task first. Maladaptive perfectionism predicted less satisfaction for the low-cost task with neuroticism in the model (part r = -.38, p = .005). Additionally, there was a trend for maladaptive perfectionism to predict frustration for the low-cost task beyond neuroticism (part r = .24, p = .051). Maladaptive perfectionism predicted less confidence following the low-cost task (part r = -.26, p = .046), but not once neuroticism was added to the model (part r = -.19, p = .142).

The ability of adaptive perfectionism to predict experiences for the task was also tested. Higher adaptive perfectionism scores predicted lower satisfaction and higher frustration scores for the high-cost task, even with conscientiousness in the model (|part rs| > .26, ps < .04). It should be noted that suppression occurred between conscientiousness and adaptive perfectionism for those analyses because there was only a trend in both cases until conscientiousness was added to the model.

Ancillary Research Questions

The present study sought to answer additional questions about the relationships between measures of adaptive perfectionism and social anxiety, as well as the associations between informant and participant ratings of trait and task-related measures. Regarding the former issue, the finding that straightforward-total SIAS scores were not positively correlated with High Standards, Pure Personal Standards, their composite measure, or informant-rated Pure Personal Standards (|rs| < .09, ps > .32) is consistent with prior research (e.g., Shumaker & Rodebaugh, 2009).

Informant ratings of participant traits were expected to have stronger relationships with participant ratings of more observable traits (e.g., conscientiousness). Participants (M = 19.24) were younger than informants (M = 33.24), who were parents (n = 127, 42.8%) and friends (n = 170, 57.2%). The number of participants who were rated ranged from 99 to 116 across the six measures. On average, there were 2.22 informants per participant. Most participants (62.7%) were female and White (54.5%) or Asian (35.1%).

As hypothesized, the informant-participant correlation for conscientiousness (r = .53, p < .001) was significant, but the informant-participant correlation for neuroticism was also significant (r = .34, p < .001). Informant-rated Concern over Mistakes was associated with self-reported neuroticism (r = .27, p = .007), but not conscientiousness (r = -.05, p = .614). Conversely, informant ratings of Pure Personal Standards were correlated with conscientiousness (r = .31, p = .002), but not neuroticism (r = -.13, p = .222). These informant-participant correlations bolster previous findings that link conscientiousness with adaptive perfectionism and neuroticism with maladaptive perfectionism (e.g., Cox et al., 2002). Refer to Table 3 for correlations between informant and participant ratings of personality measures.

Informant-rated Concern over Mistakes correlated significantly with participant Concern over Mistakes (r = .26, p = .011) and not participant Pure Personal Standards (r = .09, p = .369). However, informant ratings of Pure Personal Standards did not discriminate participant Concern over Mistakes from Pure Personal Standards: Informant ratings correlated with both (rs > .23, ps < .02). Although Pure Personal Standards is hypothesized to assess adaptive rather than maladaptive perfectionism, its relationship with Concern over Mistakes for informant and participant ratings (rs > .33, ps < .01)

suggests that maladaptive and adaptive dimensions of perfectionism share a significant portion of variance, and that this relationship is not due merely to self-report biases. After establishing the pattern of correlations among informant and participant ratings of personality measures, the ability of informant ratings to provide unique information about task measures was tested.

Informant ratings of neuroticism predicted anticipatory distress for the high-cost task (part r = .33, p = .010), but not beyond participant-rated neuroticism (part r = .21, p = .083). Informant-rated neuroticism predicted lower confidence ratings for the high-cost task beyond participant-rated neuroticism (part r = -.28, p = .026). Informant ratings of conscientiousness predicted confidence after the high-cost task beyond participant-rated conscientiousness (part r = .28, p = .032). Informant-rated conscientiousness also predicted lower anticipatory and performance distress for the high-cost task (|part rs| > .25, ps < .06), but not beyond participant-rated conscientiousness (|part rs| < .12, ps > .36). Informant-rated Concern over Mistakes predicted confidence after the high-cost task beyond participant ratings of maladaptive perfectionism (part r = -.36, p = .013). Table 4 includes regression coefficients for tests of the incremental validity of informant ratings beyond the most similar participant-rated measures for predicting task variables.

For the low-cost task, informant-rated Concern over Mistakes predicted performance distress (part r = .31, p = .037), but not beyond participant-rated maladaptive perfectionism (part r = .20, p = .170). Each informant also rated the participant in terms of the features of narcissistic personality disorder and obsessive-compulsive personality disorder using items from the MAPP. Informant ratings of narcissistic traits predicted anticipatory distress (part r = .37, p = .007) and performance

distress (part $r = .40$, $p = .003$) for the low-cost task, but not beyond participant-rated maladaptive perfectionism (part rs $< .21$, ps $> .09$). Informant-rated OCPD traits predicted anticipatory distress (part $r = .26$, $p = .030$) for the low-cost task beyond maladaptive perfectionism. There was a trend for informant-rated OCPD traits to predict performance distress for the low-cost task beyond maladaptive perfectionism (part $r = .21$, $p = .075$), but there was a significant interaction between informant-rated OCPD traits and maladaptive perfectionism (part $r = .28$, $p = .017$). Probing of the interaction demonstrated that informant-rated OCPD traits were significantly associated with performance distress when maladaptive perfectionism was high ($\beta = .45$, $p = .001$), but not when maladaptive perfectionism was low ($\beta = -.02$, $p = .920$). Similarly, maladaptive perfectionism was significantly associated with performance distress when informant-rated OCPD traits were high ($\beta = .70$, $p < .001$), but not when informant-rated OCPD traits were low ($\beta = .23$, $p = .090$). See Figure 3 for the plotted interaction.

Discussion

In contrast to the findings of Stoeber et al. (2010), there was limited support for the ability of adaptive perfectionism to predict performance on a computerized letter search task. The only significant prediction of task performance was the interaction of conscientiousness and adaptive perfectionism, such that low levels of both produced the best performance for the high-cost task. This suggests that a highly deliberate style may impair performance for timed tasks that reward efficiency. Despite modifications intended to increase the difficulty of the task, we replicated Stoeber and colleagues' finding that maladaptive perfectionism was not significantly associated with task performance.

Maladaptive perfectionism predicted distress prior to and after the high-cost search task, but it did not demonstrate incremental validity beyond neuroticism. Rosser, Issakidis, and Peters (2003) found that a measure of pre-treatment maladaptive perfectionism (Concern over Mistakes) no longer predicted post-treatment social anxiety levels when neuroticism and depression were in the model. However, maladaptive perfectionism did achieve incremental validity in the present study by predicting distress before and after the low-cost task with neuroticism in the model. Although Frost et al. (1995) utilized a Stroop task, they also found that higher scores on a measure of maladaptive perfectionism were associated with more activated negative affect. Maladaptive perfectionism was able to significantly predict some task-related measures for the high-cost and low-cost tasks, and prediction of frustration and satisfaction was the most consistent.

Surprisingly, adaptive perfectionism was a significant predictor of anticipatory distress for the high-cost task, and it accounted for unique variance in satisfaction and frustration ratings following the high-cost task. Adaptive perfectionism, therefore, seems to be a useful source of information about reactions to a brief computerized task. When conscientiousness is also a predictor, however, the residual variance accounted for by adaptive perfectionism seems to be of a more maladaptive nature. This is consistent with the fact that adaptive perfectionism is often significantly correlated with maladaptive perfectionism, so its relationship with outcomes becomes more similar to maladaptive perfectionism when the variance related to conscientiousness is excluded.

In sum, there were inconsistencies in the extent to which perfectionism dimensions accounted for variability in responses to a letter search task. The present

study adds to the growing body of research that has found partial support for the relationship between perfectionism dimensions and experiences for brief tasks. One could conclude that the task with optimal relevancy to perfectionism has simply not been discovered or tested sufficiently. On the other hand, if perfectionism dimensions are viewed as clusters of personality facets, rather than traits on the order of the Big Five factors, mixed results regarding incremental validity do not necessarily undermine the utility of the constructs for all purposes. Paunonen and Ashton (2001) found that Big Five facets displayed incremental validity beyond the higher order factors for a number of behaviors. For example, conscientiousness facets (competence, deliberation), which can be considered similar to aspects of adaptive perfectionism, contributed uniquely to the prediction of arithmetic ability in their sample of undergraduates. From the perspective of perfectionism dimensions as sets of facets, which overlap to some extent with factors like neuroticism and conscientiousness, instances of incremental validity could be infrequent and vary depending upon the nature of the measures, task, and sample.

The present study suggests that perfectionism dimensions are better at predicting affective experiences, rather than performance, for computerized search tasks, but unique effects were not found across different types of dependent measures. Perfectionism dimensions are often theorized to relate to performance (for a review, see Stoeber et al., 2010), yet the most prominent measures of maladaptive perfectionism (and adaptive perfectionism to a lesser extent) focus on distress stemming from performance standards. Thus, it seems that common perfectionism measures are better suited to assess affective experiences that may stem from performance situations. Given the present findings and inconsistent results from other researchers, the notion that perfectionism dimensions

relate meaningfully to situational performance does not seem viable. In studies that reported significant relationships between adaptive perfectionism and performance on brief tasks, conscientiousness may have contributed largely to the outcomes.

These findings also highlight the value of supplementing the assessment of perfectionism and related constructs with informant ratings. There was moderate agreement between informant and participant ratings of levels of perfectionism and other traits. Informants demonstrated better than expected awareness of the participant's distress-related traits (neuroticism, maladaptive perfectionism). There were a few instances in which informant ratings displayed incremental validity beyond corresponding participant ratings for predicting task measures. No consistent pattern emerged in terms of significant predictors, however, and there was no clear differentiation between particular task measures or the high- versus low-cost tasks. In addition to reinforcing self-report of personality traits, informant ratings of measures such as Concern over Mistakes significantly predicted variance in certain task responses that were not accounted for by self-report measures. The interaction of participant maladaptive perfectionism and informant-rated OCPD traits suggests that high levels of both measures evoked the most performance distress for the low-cost task. Recent findings suggest that OCPD can be conceptualized as excessively elevated conscientiousness (Samuel & Widiger, 2011). Thus, behaviors such as strict discipline, along with aspects of maladaptive perfectionism (e.g., fear of mistakes, self-criticism) could exacerbate discomfort for brief laboratory tasks.

The present study provides further support for the notion that possessing high standards is not an essential feature of social anxiety. As noted by Shumaker and

Rodebaugh (2009), social anxiety is not consistently related to high standards, contrary to the contentions of some researchers (e.g., Clark & Wells, 1995). Therefore, primarily maladaptive perfectionism, rather than adaptive perfectionism, should be investigated in relation to social anxiety. Theories that postulate a role for high standards in social anxiety should be revised to reflect the relevance of factors such as self-criticism of social performance and perceptions of difficulty meeting social expectations.

Limitations of this study include reliance on self-report for most analyses, a sample with limited diversity (mostly young White women), and use of a computer task with low ecological validity. It is possible that a version of the task yielding more errors could evoke the hypothesized performance effects to a greater extent. Due to order effects, only measures for the first task were utilized for evaluating hypotheses, which reduced the sample size and ability to detect effects. Future research should investigate relationships between perfectionism dimensions and responses for a variety of tasks that are relevant to core features of perfectionism (e.g., fear of mistakes). A useful task would be easily administered and reflect impairments that individuals with problematic perfectionism encounter regularly, either intrapersonally or interpersonally. Informant-report may be especially important for the assessment of interpersonal aspects of perfectionism, which are likely to be observed in many clinical settings. Another possibility is that the harmful consequences of maladaptive perfectionism tend to accumulate gradually and in domains that are of great importance (e.g., close relationships), so brief laboratory tasks may be poorly equipped to detect meaningful effects.

Measures such as neuroticism seem to account for as much or more information about negative responses to brief tasks than does maladaptive perfectionism. Yet much research has demonstrated the contributions of dimensions of perfectionism, particularly maladaptive perfectionism's connections with psychological symptoms (for a review, see Shafran & Mansell, 2001), so perfectionism measures (self- and informant-report) should be investigated further in terms of their ability to predict important outcomes. By including higher order personality constructs such as neuroticism, studies testing the utility of perfectionism measures can more rigorously specify their unique contributions. Perfectionism subscales have been found to predict the extent of improvement following CBT for disorders such as major depression and social anxiety disorder (e.g., Zuroff et al., 2000; Ashbaugh et al., 2007), but it is unclear how perfectionism dimensions compare to other traits (e.g., the Big Five factors) in their ability to predict clinical outcomes. Additional research would clarify the settings for which perfectionism measures have the most utility. Investigations of the ability of perfectionism dimensions to predict symptoms and functioning following stressful experiences (e.g., death of a loved one, combat deployment) would be a valuable addition to the perfectionism literature.

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Table 1

Intercorrelations Between Perfectionism Subscales

Subscale	MEC	PPS	Organization	Discrepancy	High Standards	Order
MEC	--	.36**	.01	.57**	.18*	.06
PPS		--	.18*	.15	.65**	.23**
Organization			--	-.17	.29**	.89**
Discrepancy				--	.02	-.07
High Standards					--	.35**
Order						--

*Note. n*s ranged from 130 to 133; * $p < .05$, ** $p < .01$; MEC = Maladaptive Evaluative Concerns, PPS = Pure Personal Standards; A correlation table containing all variables is available upon request.

Table 2

Means for Task Measures Based on Task Cost and Order

	Task Type *M* (*SE*) Lower bound – Upper bound			
	High Cost		Low Cost	
Measure	First	Second	First	Second
Score	352.21 (17.37)	441.92 (17.98)	497.10 (10.83)	496.21 (10.46)
	317.78 – 386.64	406.28 – 477.56	475.64 – 518.56	475.45 – 516.94
Anticipatory				
Distress	.02 (.30)	.01 (.31)	.04 (.29)	.00 (.28)
	-.57 – .62	-.61 – .62	-.54 – .62	-.56 – .56
Performance				
Distress	.38 (.41)	.77 (.43)	-.43 (.37)	-.70 (.36)
	-.43 – 1.19	-.07 – 1.61	-1.17 – .31	-1.42 – .01
Frustration	27.55 (2.85)	33.88 (2.95)	17.22 (2.51)	27.23 (2.42)
	21.90 – 33.20	28.04 – 39.73	12.25 – 22.19	22.43 – 32.03
Satisfaction	68.79 (2.52)	72.40 (2.61)	76.68 (2.41)	76.41 (2.33)
	63.80 – 73.79	67.23 – 77.58	71.90 – 81.46	71.79 – 81.03
Confidence	83.20 (2.15)	82.07 (2.23)	85.00 (1.81)	85.98 (1.75)
	78.93 – 87.47	77.65 – 86.49	81.41 – 88.59	82.51 – 89.46
Enjoyment	53.87 (3.11)	50.69 (3.22)	54.91 (3.15)	56.16 (3.04)
	47.71 – 60.04	44.31 – 57.07	48.67 – 61.14	50.13 – 62.18

Note. Lower and upper bounds are for 95% confidence intervals obtained from the general linear model with maladaptive perfectionism, adaptive perfectionism, conscientiousness, and neuroticism as covariates.

Table 3

Intercorrelations Among Informant- and Participant-rated Personality Subscales

Subscale	Consc-I	Neurot-I	NPD-I	OCPD-I	CM-I	PPS-I	Consc-P	Neurot-P	MalPerf-P	AdaptPerf-P
Consc-I	--	-.19*	-.08	.19*	-.06	.33**	.53**	-.19*	-.22*	.21*
Neurot-I		--	.33**	.33**	.26**	-.04	.04	.33**	.28**	.03
NPD-I			--	.42**	.56**	.20*	-.12	.24*	.29**	.08
OCPD-I				--	.44**	.48**	.17	.07	.08	.08
CM-I					--	.34**	-.05	.28**	.21*	.09
PPS-I						--	.32**	-.14	.02	.33**
Consc-P							--	-.35**	-.23**	.57**
Neurot-P								--	.53**	.01
MalPerf-P									--	.23*
AdaptPerf-P										--

*Note. n*s range from 95 to 130; * $p < .05$, ** $p < .01$; Consc-I = informant-rated conscientiousness, Consc-P = participant conscientiousness, Neurot-I = informant-rated neuroticism, Neurot-P = participant neuroticism, NPD-I = informant-rated narcissistic personality disorder traits, OCPD-I = informant-rated obsessive-compulsive personality disorder traits, CM-I = informant-rated Concern over Mistakes, MalPerf-P = participant maladaptive perfectionism composite, PPS-I = informant-rated Pure Personal Standards, AdaptPerf-P = participant adaptive perfectionism composite.

Table 4

Regression coefficients (part r) for regressions testing incremental validity of informant-rated personality measures predicting task 1 measures

Predictor	Dependent Variable						
	Task Score	Anticipatory Distress	Performance Distress	Satisfaction	Frustration	Confidence	Enjoyment
Conscientiousness							
High Cost	.02	-.17	-.17	.06	-.11	.28*	-.31[1]*
Low Cost	.01	.14	.04	.05	-.09	-.01	.16
Neuroticism							
High Cost	-.14	.21	.07	-.15	.15	-.28*	-.06
Low Cost	-.09	.03	.08	-.01	.11	.10	-.11
Concern over Mistakes							
High Cost	-.09	.08	.15	-.26	.09	-.36*	.01
Low Cost	.10	.11	.20	.13	.10	.16	.18
Pure Personal Standards							

High Cost	-.03	-.15	-.13	-.19	-.10	-.08	-.12
Low Cost	.14	.18	.21	-.17	.00	-.16	.07
OCPD traits							
High Cost	.11	.09	.14	-.11	.02	-.13	.07
Low Cost	-.12	.26*	.21[1]	-.02	-.04	-.02	.15
NPD traits							
High Cost	-.14	.12	.02	-.11	.05	-.06	-.03
Low Cost	-.02	.21	.18	.02	.13	-.03	.03

Note. *n*s ranged from 44 to 58; * $p < .05$; [1]significant interaction with competing predictor; OCPD = obsessive-compulsive personality disorder; NPD = narcissistic personality disorder; Competing predictors were as follows: Participant conscientiousness for informant-rated conscientiousness; participant neuroticism for informant-rated neuroticism; participant adaptive perfectionism for informant-rated Pure Personal Standards; participant maladaptive perfectionism for informant-rated Concern over Mistakes, OCPD traits, and NPD traits.

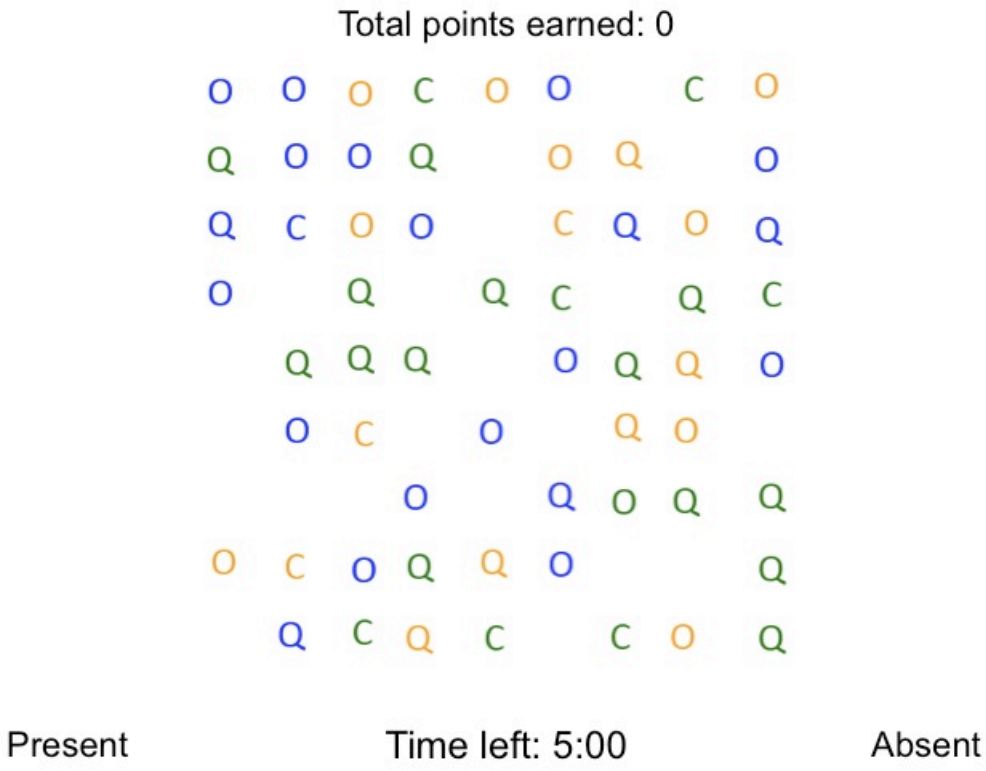

Figure 1. Sample screenshot of the letter search task. The target is present, so the participant would press the designated key on the left side of the keyboard.

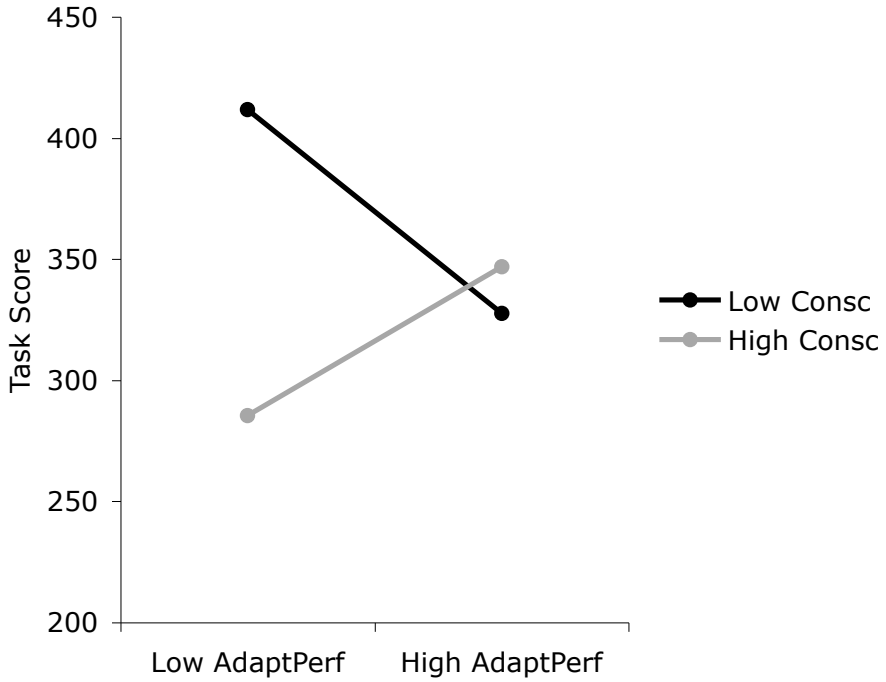

Figure 2. Interaction of conscientiousness (Consc) and adaptive perfectionism (AdaptPerf) for predicting task performance when the high-cost task was completed first.

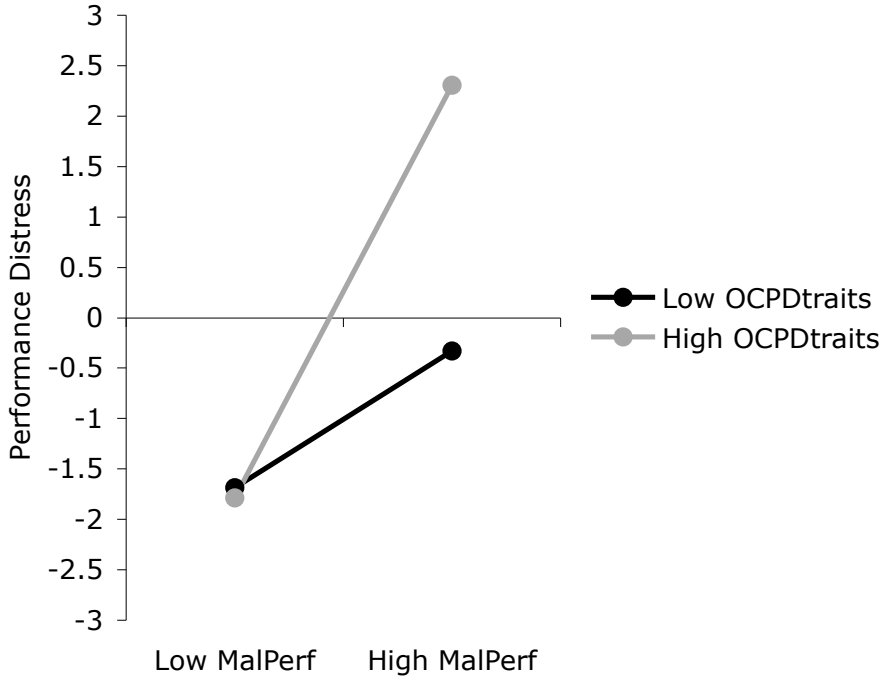

Figure 3. Interaction of informant-rated obsessive-compulsive personality disorder traits (OCPDtraits) and participant-rated maladaptive perfectionism (MalPerf) for predicting participant performance distress following the low-cost task when it was completed first.