The Effect of Adaptive Perfectionism, Maladaptive Perfectionism, and Feedback on Procrastination Behaviour

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Abstract

The goal of the current research was to improve on previous studies by more directly examining the relationship between perfectionism and actual procrastination behaviour. In Study 1, participants \((N = 167)\) were given five minutes to prepare for a verbal analogy test during which time they could complete practice materials or play a computer game. After the first test, participants were randomly assigned to receive positive feedback, negative feedback, or no feedback. They then had a second chance to study or play the computer game before they completed another verbal analogy test.

Adaptive perfectionism was a significant predictor of less procrastination behaviour on the initial test although feedback on the first test did not change the subsequent behaviour of adaptive perfectionists. Maladaptive perfectionism was not a significant predictor of procrastination behaviour on the initial task. However, for women who were higher in maladaptive perfectionism, the more upset they were from receiving negative feedback on the first task, the more they increased their procrastination on the second task.

The purpose of Study 2 was to examine two potential mechanisms, low performance expectations or mood repair, which may have been responsible for the increase in procrastination behaviour seen in women who were higher in maladaptive perfectionism and upset about receiving negative feedback. Participants \((N = 138)\) all received negative feedback on the first test, which was followed by an optimism prime, positive mood prime, or neutral prime. Participants then were given a second chance to study or play the computer game before they completed another verbal analogy test.

The positive mood prime did not have a significant effect on procrastination
behaviour. Among women who were lower in adaptive perfectionism, the optimism
prime resulted in a decrease in procrastination behaviour for women higher in
maladaptive perfectionism and an increase in procrastination behaviour for women lower
in maladaptive perfectionism. These findings are discussed in terms of their relevance
for the academic outcomes of adaptive and maladaptive perfectionists.
Co-Authorship

I assumed primary responsibility for the conceptualization and execution of the research reported in this thesis. In recognition of her assistance in the design of the studies, data analysis, and manuscript preparation, my supervisor, Dr. Jill A. Jacobson, serves as a co-author.
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Chapter 1: Introduction and Literature Review

Perfectionism involves striving for perfection and the belief that failure to obtain perfection is unacceptable. Historically, the majority of research on perfectionism has focused on the maladaptive outcomes associated with this personality style. Burns (1980) demonstrated the link between perfectionistic beliefs and mental health problems, physical health problems, and poorer performance. He discussed a number of negative outcomes associated with perfectionism including: depression, anxiety, obsessive compulsive disorder, decreased productivity, writer’s block, problems with self-control, low self-esteem, troubled personal relationships, and even increased coronary disease.

In addition to the above problems related to perfectionism, Burns argues that perfectionism has been shown to hinder performance in numerous fields including one’s occupation, academics, and athletics. For example, when measuring the attitudes and income of insurance agents, he found that the agents with perfectionistic tendencies, whose self-esteem was affected by their sales, actually earned an average of $15,000 less each year than did non-perfectionists (Burns, 1980). In a study of Pennsylvania law school students, Beck and Burns (1979) found that the majority of students who were considering dropping out of law school demonstrated perfectionistic attitudes. In the area of athletics, less skilled racquetball players reported perfectionist attitudes and a difficulty recovering from mistakes, but these traits were not present in the more successful players (Meyers, Cooke, Cullen, & Liles, 1979).

This view of perfectionism as one-dimensional and maladaptive was dominant in the literature for a number of years. In his APA Distinguished Professional Contribution Award address, Pacht (1984) focused on the maladaptive nature of perfectionism. In
addition to the negative outcomes previously mentioned, Pacht linked perfectionism to alcoholism, erectile dysfunction, irritable bowel syndrome, anorexia, abdominal pain, and ulcerative colitis. When describing his view of perfectionism, he stated that: “The insidious nature of perfectionism leads me to use the label only when describing a kind of psychopathology” (Pacht, 1984, p. 387).

Early attempts to measure perfectionism also reflected this one-dimensional, maladaptive definition, but in the early 1990s, the conceptualization of perfectionism began to broaden with the development of two multidimensional perfectionism scales. Frost, Marten, Lahart, and Rosenblate (1990) developed the Multidimensional Perfectionism Scale (MPS-F) that assessed six dimensions of perfectionism: (1) Personal Standards: setting high standards for oneself; (2) Organization: one’s tendency to place importance on order; (3) Parental Expectations: the belief that one’s parents hold very high expectations for oneself; (4) Parental Criticism: the belief that one’s parents are too harsh and critical; (5) Doubts about Actions: having doubts about one’s abilities; and (6) Concern over Mistakes: the tendency to be excessively worried about making a mistake and the belief that mistakes should be considered failures.

Frost et al. (1990) examined the correlates of the six subscales with various measures of personality and psychopathology. The six subscales had significant overlap and were associated primarily with maladaptive constructs. Personal Standards and Organization were significantly negatively correlated with procrastination, whereas the Personal Standards subscale was significantly correlated with self-efficacy but also marginally correlated with depression. Parental Expectations, Parental Criticism, Doubts about Actions, and Concern over Mistakes were all significantly correlated with fear of
failure, task aversiveness, and procrastination. The Doubts about Actions and the Concern Over Mistakes subscales also were both correlated with emotional difficulties such as depression, anxiety, and hostility. These patterns of correlations suggest that some of the six subscales are measuring similar constructs, and thus that the MPS-F may include too many dimensions.

The following year, Hewitt and Flett (1991) published a competing framework of perfectionism, also called the Multidimensional Perfectionism Scale (MPS-HF). It assessed three dimensions of perfectionism: (1) Self-Oriented Perfectionism: striving for perfection and setting high standards for the self; (2) Socially-Prescribed Perfectionism: concern about meeting other’s high expectations of the self; and (3) Other-Oriented Perfectionism: the setting of high standards for others by the self.

Hewitt and Flett (1991) examined the correlates of these three subscales with various measures of personality, performance standards, and psychopathology. Self-Oriented Perfectionism showed significant correlations with predominantly self-concerned constructs such as high self-standards, self-disappointment, self-criticism, self-focused performance standards, as well as emotional difficulties such as depression, anxiety, and hostility. Socially-Prescribed Perfectionism showed significant correlations with mainly socially relevant constructs such as a fear of negative evaluation, other blame, social importance goals, interpersonal sensitivity, seeking approval from others, as well as significant associations with the following personality disorders: schizoid, avoidant, passive-aggressive, and borderline. In addition, Socially-Prescribed Perfectionism was associated with a number of psychopathologies including obsessive compulsive behaviour, depression, anxiety, hostility, phobias, paranoia, and
psychoticism. Other-Oriented Perfectionism showed significant correlations with
superiority-related constructs such as narcissism, entitlement, other-blame, high social
standards, and antisocial personality disorder. These patterns of correlations suggest that
the three subscales are not measuring the same construct and thus have divergent validity.

Frost, Heimberg, Holt, Mattia, and Neubauer (1993) perceived some overlap
between the two multidimensional perfectionism scales and completed a factor analysis
of the nine subscales in an attempt to reduce the number of dimensions. Their results
supported a two-factor solution. They called the first factor Maladaptive Evaluative
Concerns, and it consisted of high loadings on the Parental Criticism, Parental
Expectations, Doubts about Actions, Concern over Mistakes, and Socially-Prescribed
Perfectionism subscales. The second factor, which was called Positive Striving,
consisted of high loadings on the Personal Standards, Organization, Self-Oriented
Perfectionism, and Other-Oriented Perfectionism Scales. They found that the
Maladaptive Evaluative Concerns factor (which from this point on will be referred to as
maladaptive perfectionism) was significantly correlated with negative affect and
depressive symptomatology, whereas the Positive Striving factor (which from this point
on will be referred to as adaptive perfectionism) was significantly correlated with positive
affect.

Although the idea of categorizing types of perfectionism into maladaptive and
adaptive was not unique (cf. Hamechek, 1978), Frost et al. (1993) provided the first
empirical evidence for the two types. Bieling, Israeli, and Antony (2004) offered
additional support for this two-factor model of perfectionism by showing that it was a
better fit for the two multidimensional perfectionism scales than a one-dimensional
approach to perfectionism or an approach where the two multidimensional perfectionism scales were viewed as separate constructs.

Various researchers have since used an adaptive/maladaptive distinction in their investigations of the psychological correlates of perfectionism. Although the majority of studies have utilized some combination of the MPS-F and the MPS-HF in defining adaptive and maladaptive perfectionism, other researchers have also used the Almost Perfect Scale (Johnson & Slaney, 1996), the Almost Perfect Scale-Revised (Slaney, Rice, Mobley, Trippi, & Ashby, 2001), the Perfectionism Inventory (Hill, Huelsman, Furr, Kibler, Vicente, & Kennedy, 2004), and the Perfectionism Questionnaire (Rheaume, Freeston, Ladouceur, Bouchard, Gallant, & Talbot, 2000). Comparing past studies is further complicated because researchers have used different labels for adaptive and maladaptive perfection, and even those who have used the MPS-F or MPS-HF have included different subscales in their characterization of these constructs (Stoeber & Otto, 2006).

In spite of the various conceptualizations of adaptive and maladaptive perfectionism, research has consistently supported the idea that maladaptive perfectionism is associated with negative outcomes such as depression, stress, anxiety, neuroticism, and suicide ideation (Bieling et al., 2004; Enns, Cox, Sareen, & Freeman, 2001). (See Lee, 2007, for a more detailed summary of the correlates of maladaptive perfectionism).

The validity of an adaptive dimension of perfectionism has been less clear. Stoeber and Otto (2006) report that out of 14 studies with significant findings, six studies found that adaptive perfectionism was associated with exclusively positive constructs,
four found that adaptive perfectionism was associated with both positive and negative constructs, and four found that adaptive perfectionism was associated with exclusively negative constructs. Studies were more likely to find an association between adaptive perfectionism and positive constructs when researchers controlled for the overlap with maladaptive perfectionism (as the two types of perfectionism are positively correlated with each other).

In sum, adaptive perfectionism has been linked to various positive outcomes including: higher exam performance, life satisfaction, positive affect, endurance, extroversion, and conscientiousness (Bieling, Israeli, Smith, & Antony, 2003; Chang, Watkins, & Banks, 2004; Parker & Stumpf, 1995; Stumpf & Parker, 2000). It also is correlated with negative constructs such as anxiety, stress, depression, hopelessness, neuroticism, and suicide ideation (Bieling et al., 2004; Enns et al., 2001).

Perfectionism and Academics

One area of research where the distinction between adaptive and maladaptive perfectionism has proven especially useful is the field of academics. Neumeister (2004a) examined the relationship between perfectionism and achievement motivation by interviewing gifted college students. Two very different patterns of motivation separated maladaptive and adaptive perfectionists. Maladaptive perfectionists were characterized by a fear of failure motivation or concern about what other people would think of them if they fell short of their expectations. Maladaptive perfectionists demonstrated approach behaviours (e.g., signing up for the most difficult classes), but their reasons for doing so were driven by their fear of failure (e.g., looking unintelligent if they avoided these classes). These individuals also demonstrated avoidance behaviours such as a refusal to
speak in class unless they were 100% sure of the answer. Maladaptive perfectionists also engaged in a significant amount of procrastination. The explanation they provided was that procrastination provided them with an excuse for not doing well.

In contrast, adaptive perfectionists were characterized by achievement motivation and mastery goals. They demonstrated approach behaviours (e.g., taking difficult classes) because they were influenced by their love of learning and need for self improvement. They were highly motivated to be perfect but were predominantly motivated by concept mastery. Adaptive perfectionists also demonstrated a strong work ethic and a tendency to prepare in advance rather than procrastinate.

Various researchers have also shown empirical support for the differing academic outcomes of adaptive and maladaptive perfectionists. Adaptive perfectionism has been positively related to academic achievement at different levels of education including high school (Accordino, Accordino, & Slaney, 2000), university (Beiling et al., 2003; Grzegorek, Slaney, Franze, & Rice, 2004; Rice & Slaney, 2002), medical school (Enns et al., 2001), and graduate school (Witcher, Alexander, Onwuegbuzie, Collins, & Witcher, 2007). Moreover, these associations have been found for both overall GPA (Accordino et al., 2000; Enns et al., 2001; Grzegorek et al., 2004; Rice & Slaney, 2002) and performance in a specific class (Witcher et al., 2007) or on a particular exam (Beiling et al., 2003).

**Perfectionism and Procrastination**

Although maladaptive perfectionists also have high achievement goals, maladaptive perfectionism is not significantly related to achievement but is related to procrastination. Procrastination has been defined as “the tendency to postpone that which
is necessary to reach some goal” (Lay, 1986, p. 492). It has been linked to negative academic outcomes including handing in assignments late, lower grades on assignments, lower grades on exams, and a lower GPA (Rothblum, Solomon & Murakami, 1986; Tice & Baumeister, 1997). Procrastination is associated with psychological problems including depression, anxiety, and low self-esteem (Beswick, Rothblum, & Mann, 1988). Those who procrastinate also report greater stress, physical ailments, and more visits to health care professionals (Tice & Baumeister, 1997).

Procrastination may be a type of self-handicapping because it creates obstacles that undermine one’s ability to achieve. If individuals perform poorly, they can attribute their failure to these obstacles (e.g., lack of effort) rather than lack of ability (Ferrari & Tice, 2000). A commonly cited theory on procrastination (Burka & Yuen, 1983) suggests that procrastinators equate self-worth with achievement. By creating obstacles to achievement, procrastinators can claim that poor outcomes do not reflect their actual ability, which protects their self-esteem. This tendency to create obstacles was discussed by Ferrari (1991) who found that procrastinators were more likely than non-procrastinators to choose the presence of a debilitating noise when completing a laboratory task.

Various researchers have empirically demonstrated the link between maladaptive perfectionism and procrastination (e.g., Frost et al., 1990; Onwuebuzie, 2000) although sometimes this relationship has been found only in men (Flett, Blankstein, Hewitt, & Koldin, 1992; Kilbert, Langhinrichsen-Rohling, & Saito, 2005). The relationship between adaptive perfectionism and procrastination, however, is less clear. It has been shown to negatively correlate with procrastination regardless of gender (Seo, 2008) or
only in women (Frost et al., 1990; Kilbert et al., 2005). Other studies have found no correlation with procrastination (Flett et al., 1992; Onwuebuzie, 2000). Notably, all of this research has looked at self-reported procrastination rather than actual procrastination behaviour, which may be a better construct to explore to more clearly determine the nature of the relationship between the two types of perfectionism and procrastination.

**Perfectionism and Feedback**

Procrastinators and maladaptive perfectionists share similar cognitions including the belief in the importance of success and the tendency to equate self-worth with task performance. So what happens when they receive feedback that they have done either well or poorly? Because perfectionists tend to equate their performance with their self-worth, negative feedback can affect not just their mood but also their self-concept (Hewitt & Flett, 1993). In addition, perfectionists are more likely to engage in all or nothing thinking and overgeneralize failures (Hewitt, Flett, Turnbull-Donovan, & Mikail, 1991), to make internal attributions for failures as well as conclude that they are a failure overall if they fail on any one task (Neumeister, 2004b).

Various researchers have empirically demonstrated how maladaptive perfectionists respond to negative feedback. Frost, Turcotte, Heimborg, and Mattia (1995) induced participants to make a high number of mistakes in a laboratory task. Compared to those low in maladaptive perfectionism, participants high in maladaptive perfectionism reacted with less self-confidence, more negative affect, and were more likely to report that they should have done better. Participants high in maladaptive perfectionism were also more hesitant about sharing their performance results because they believed that others would view their performance as a sign of low intelligence.
Besser, Flett, Guez, and Hewitt (2008) found that participants high in maladaptive perfectionism who received negative feedback on a laboratory task demonstrated increased levels of dysphoria and anxiety, lower self-esteem, and increased systolic blood pressure.

Although adaptive perfectionism has been linked to higher achievement and less procrastination, what happens when these individuals encounter feedback that suggests they are not living up to their high standards? Flett and Hewitt (2006) caution against equating adaptive perfectionism with adaptive functioning and argue that harmful outcomes associated with adaptive perfectionism may become evident over time or when an individual is faced with personal setbacks or failures. Therefore, adaptive perfectionists may not be able to maintain their high motivation to succeed in the face of regular disappointment and perceived failures.

Indeed, adaptive perfectionists like maladaptive perfectionists appear to respond to negative feedback more dramatically than do non-perfectionists. For example, Besser, Flett, and Hewitt (2004) found that those higher in adaptive perfectionism responded to negative feedback with greater negative affect, anxiety, and hostility than did those lower in adaptive perfectionism. These participants were also more disappointed with their performance, showed more rumination, believed that doing well on the task was highly important, and believed that others had done better than they had.

Little research to date has examined how perfectionists respond to positive feedback. Besser et al. (2008) found that both adaptive and maladaptive perfectionists showed increased positive affect after receiving success feedback. Stoeber, Kempe, and Keogh (2008) found that adaptive perfectionism was positively correlated with pride.
following success, whereas maladaptive perfectionism was negatively correlated with pride following success. Hence, maladaptive perfectionists, who believe that other’s approval of them is conditional, do not experience pride following their success, and the positive affect they experience may just be a sign of relief.

**The Current Research**

Although several studies have examined the relationship between perfectionism and self-reported procrastination, the link between perfectionism and actual procrastination behaviour has not been well established in the literature. In addition, whereas attention has been given to the affective and cognitive reactions of perfectionists to feedback, we know little about how feedback actually affects their future behaviour. Therefore, the goal of the current research was to improve on previous studies by more directly examining the relationship among perfectionism, feedback, and actual procrastination behaviour. In Study 1, I explored the nature of the relationship among these three constructs, and then in Study 2, I investigated possible mechanisms for my Study 1 results.
Chapter 2: Study 1

In Study 1, I compared adaptive and maladaptive perfectionists’ procrastination behaviour on an initial laboratory task and on a subsequent lab task after they received positive, negative, or no feedback about their prior performance. I expected that adaptive perfectionism would be associated with less procrastination on the initial lab task, whereas maladaptive perfectionism would be associated with more procrastination on this task. In response to negative feedback, I expected that maladaptive perfectionists would respond by increasing their subsequent procrastination behaviour. I expected that adaptive perfectionists also may increase their procrastination behaviour in response to negative feedback although the superior study habits of adaptive perfectionists may be affected only by repeated exposure to failure feedback over a longer period of time. As little research has been done on perfectionism and positive feedback, I did not have a strong hypothesis for how participants’ procrastination behaviour would be affected by receiving positive feedback.

Method

Participants

Participants were 167 Queen’s University students (101 women) who were enrolled in Introduction to Psychology. The mean age of participants was 18.26 years ($SD = 0.91$). In exchange for their participation in this one-hour study, students received 1% towards their final grade in the course or $10.

A power analysis was conducted to ensure that the total sample size would be sufficient to detect the hypothesized effects. Previous studies that have examined the relationship between maladaptive perfectionism and procrastination have reported
significant effects ranging from $r^2 = .04$ to $r^2 = .14$ (Flett et al., 1992; Frost et al., 1990; Kilbert et al., 2005; Onwuebuzie, 2000; Santanello & Gardner, 2007). Based on the guidelines recommended by Cohen (1992), an effect size in this range is considered small to medium in magnitude. I utilized GPOWER software to conduct a power analysis for multiple regression with an effect size halfway between small and medium ($f^2 = .085$), alpha level = .05, power = .08, and four predictors. This analysis recommended a sample size of $N = 146$. Therefore, the total sample of 167 participants in Study 1 is likely sufficient to detect the hypothesized effects.

Materials (See Appendix A for all Study 1 experimental materials)

Perfectionism measures. As recommended by Frost et al. (1993), two multidimensional perfectionism measures were used in this study. First, the Multidimensional Perfectionism Scale (MPS-F) created by Frost et al. (1990) is a 35-item self-report scale that assesses six dimensions of perfectionism in addition to a total score. Participants read a series of self-statements and rate their level of agreement on a 5-point scale ranging from (1) Strongly Disagree to (5) Strongly Agree. The Personal Standards subscale (PS) measures the setting of high standards for oneself (e.g., “I hate being less than the best at things”). The Organization subscale (O) measures one’s tendency to place importance on order (e.g., “I try to be a neat person”). The Parental Expectations subscale (PE) pertains to the belief that one’s parents hold very high goals for oneself (e.g., “My parents expected excellence from me”). The Parental Criticism subscale (PC) measures the belief that one’s parents are too harsh and critical (e.g., “I never felt like I could meet my parents’ standards”). The Doubts about Actions subscale (DA) assesses having doubts about one’s abilities (e.g., “I usually have doubts about the simple
everyday things I do”). The Concern over Mistakes (CM) subscale measures the tendency to be excessively worried about making a mistake in performance and the belief that mistakes should be considered failures (e.g., “I should be upset if I make a mistake”). Subscales were scored such that higher scores reflect greater perfectionism. Frost et al. (1990) found the coefficient alphas for the subscales ranged from .77 to .93, and an alpha for the entire scale was .90. In the current study, the coefficient alphas for the subscales were also high ranging from .71 to .93, and the alpha for the entire scale was .89. Subscale means and standard deviations (see Appendix B) were slightly higher for Study 1 compared to those previously found in a similar sample of undergraduate students of European descent (Castro & Rice, 2003).

Second, the Multidimensional Perfectionism Scale (MPS-HF) created by Hewitt and Flett (1991) is a 45-item self-report scale that assesses three dimensions of perfectionism in addition to a total measure of perfectionism. Respondents rate their level of agreement for a series of self-statements on a 7-point scale ranging from (1) Disagree to (7) Agree. The Self-Oriented Perfectionism subscale (SOP) reflects striving for perfection and setting high standards for the self (e.g., “One of my goals is to be perfect in everything I do”). The Socially-Prescribed Perfectionism subscale (SPP) pertains to concern about meeting other’s high expectations of the self (e.g., “My family expects me to be perfect”). The Other-Oriented Perfectionism (OOP) subscale measures the setting of high standards for others by the self (e.g., “I have high expectations for the people who are important to me”). Several items were reverse scored, and subscale scores were calculated such that higher scores reflect greater perfectionism. In the original sample, the authors reported a coefficient alpha of .88 for self-oriented perfectionism, .81 for socially
prescribed perfectionism, and .74 for other-oriented perfectionism. In the current study, the coefficient alphas for the subscales were greater than or equal to .82, and the total scale had a coefficient alpha of .89. Means and standard deviations on these subscales for Study 1 (see Appendix B) were comparable to those found in a similar sample of university students (Martin, Flett, Hewitt, Krames, & Szanto, 1996).

A principal axis factor analysis of the six MPS-F subscales and the three MPS-HF subscales replicated the two-factor solution found by Frost et al. (1993). (See Appendix C for the factor loadings.) Parental Expectations, Parental Criticism, Doubts about Actions, Concern over Mistakes, and Socially Prescribed Perfectionism had high loadings on Factor 1 forming a Maladaptive Perfectionism factor. Personal Standards, Organization, Self-Oriented Perfectionism, and Other-Oriented Perfectionism all loaded on Factor 2, an Adaptive Perfectionism factor. Based on the results of this factor analysis, the two MPS measures were combined to yield two perfectionism scores that reflected maladaptive and adaptive forms of perfectionism. The Maladaptive Perfectionism score was created by summing the scores of the PE, PC, CM, and DA scales of MPS-F and the SPP scale of the MPS-HF. The Adaptive Perfectionism score was created by summing the scores of the PS and O scales of MPS-F and the SOP and OOP scales of the MPS-HF. Coefficient alphas for the adaptive and maladaptive dimensions were \( \alpha = .90 \) and .92, respectively. (See Table 1 for the correlation, means, and standard deviations of the two indices.)

**Procrastination measures.** The primary measure of procrastination was the number of seconds that participants spent playing a computer game during a five-minute study period. (See Table 1 for the mean and standard deviation for Time 1.) To help validate this new behavioural measure of procrastination, I also included two self-report
measures of procrastination.

The first measure was Lay’s 20-Item Procrastination Scale (LPS; Lay, 1986), a self-report scale that measures trait procrastination. It assesses a general tendency to postpone everyday tasks (e.g., “I generally delay before starting on work I have to do”). Although originally a true/false format, it was converted to a 5-point scale to allow for greater variance and reliability (Ferrari, 1992). That is, respondents rate whether the statements are characteristic or uncharacteristic of themselves using a 5-point scale ranging from (1) Extremely Uncharacteristic to (5) Extremely Characteristic. Several items are reverse scored with higher scores indicating a greater tendency to procrastinate. Lay (1986) reports high reliability, with a Cronbach’s alpha coefficient of .82. Coefficient alpha for this scale in the current sample was $\alpha = .88$. The mean and standard deviation (see Table 1) was slightly higher than that reported by Ferrari and Tice (2000) in a sample of undergraduate students.

For the second measure, the Procrastination Assessment Scale – Students (PAS-S; Solomon & Rothblum, 1984), participants consider six situations associated with academic procrastination (e.g., studying for an exam, keeping up with weekly reading assignments, etc.). For each situation, participants answer three questions. First, they report their frequency of procrastination in that situation on a 5-point scale ranging from (1) Never Procrastinate to (5) Always Procrastinate. Second, participants indicate if their procrastination is a problem in that situation on a 5-point scale ranging from (1) Not at all a problem to (5) Always a problem. Third, participants rate how much they would like to decrease their procrastination in that situation on a 5-point scale ranging from (1) Do not want to decrease to (5) Definitely want to decrease. Participants then imagine a
time when they procrastinated on finishing a term paper and are presented with possible reasons for procrastination (fear of failure, too lazy, etc.) that they rated on a 5-point scale ranging from (1) *Not at all reflects why I procrastinate* to (5) *Definitely reflects why I procrastinate*. To calculate a subscore that reflects procrastination tendency, scores on the Frequency of Procrastination item and the Problem of Procrastination item were summed within each academic situation (scores range from 2 to 10) and then across the six situations (ranging from 12 to 60). Higher scores reflect a greater tendency to procrastinate. In a sample of graduate students, Alexander and Onwuegbuzie (2007) report a high reliability for this scale with a Cronbach’s alpha of .85. In the current study, coefficient alpha for this subscale was also $\alpha = .85$, and the means and standard deviations (see Table 1) were also comparable to those reported by Alexander and Onwuegbuzie (2007).

**Mood measure.** To measure mood, I used an adapted version of the Differential Emotion Scale (DES; Cacioppo, Martzke, Petty, & Tassinary, 1988). This scale consists of eight items on which participants evaluate their current emotional state. Each item pertains to a specific emotion (e.g., “Sad/Downhearted/Blue”), and participants indicate how strongly they are currently feeling this emotion on a seven-point scale from (1) *Not at All* to (7) *Very Strongly*. In the current study, I utilized only the “Sad/Downhearted/Blue” item to measure negative affect as this emotion was the one that I expected to be most relevant for subsequent behavioural choices unlike the other negative emotions included in the DES (irritated, fearful, tense, disgusted, and contemptuous). The positive emotions (merry and warmhearted) were not as relevant to the current situation.
Procedure

Once in the lab, participants read and signed the Letter of Information/Consent Form and were given the following instructions:

We are interested in studying verbal reasoning ability. Today you will be completing a verbal analogy test that has been shown to accurately measure cognitive ability and predict future academic success. Prior to the task, you will be given 5 minutes to study analogy tips and complete practice problems that may help you with the task. If you do not wish to study for the full 5 minutes, or at all, a video game is available on the computer. You will be able to switch back and forth between the analogy practice and the video game as you wish. After 5 minutes have passed, the analogy test will be administered.

After reading the instructions, participants were left alone at the computer for five minutes to complete the practice session. After five minutes had passed, participants were told that it was time to complete the analogy test. They first indicated a score out of 10 that they would be satisfied receiving and a score out of 10 that they thought they would realistically achieve. They then completed the verbal reasoning test, which was made up of problems taken from Graduate Record Exam (GRE) practice tests.

Participants in the control condition were told that they would not receive their feedback until the very end of the experiment. Participants in the negative feedback condition received a score of 2/10, whereas those in the positive feedback condition received a score of 8/10. These scores were selected based on a pilot test of the first 25 participants in the neutral condition. These participants received a mean of 5/10 with a standard deviation of 1.5. Because participants could not receive half points on the test, a
score of 8/10 (2 SDs above the mean) was selected for the positive condition, and a score of 2/10 (2 SDs below the mean) was selected for the negative condition. After finishing the test, participants completed the DES and rated how satisfied they were with their performance and how they felt their performance would compare to other students participating in the experiment.

Next they were told that they would have a chance to study again and complete a second test to try to improve their score. Once again, participants were given five minutes to study or play the game and then administered a second test. The second test was made up of new verbal analogy problems of the same difficulty level. Following the test, participants again rated their performance satisfaction. They were told that they would receive their score on the second test at the end of the experiment.

Finally participants completed the following questionnaires: MPS-HF, MPS-F, LPS, and PAS-S. When they finished, participants were debriefed, thanked for their time and granted 1.0 credit or given $10.

**Results**

**Condition Randomization**

To ensure that randomization was successful and that my feedback manipulation did not alter participants’ responses to the personality measures, a series of one-way analyses of variance (ANOVA) were conducted with feedback condition (positive, negative, or no feedback) as the between-subjects factor and adaptive perfectionism, maladaptive perfectionism, PAS-S, and LPS scores as the dependent measures. Participants’ scores did not differ significantly across the three conditions for adaptive perfectionism, $F(2,167) = 2.94, p = .06$; maladaptive perfectionism, $F(2,167) = 1.34, p =$
.27; the PAS-S, $F(2,167) = .95, \ p = .39$; or the LPS, $F(2,167) = 2.61, \ p = .08$. Therefore, the self-report measures, although completed after the experimental manipulation, were not affected by it.

**Perfectionism and Self-Reported Procrastination**

Contrary to previous research, maladaptive perfectionism was not significantly correlated with either procrastination scale, but adaptive perfectionism was significantly negatively correlated with both scales (see Table 1). Because the relationship between perfectionism and procrastination has not been consistent for men and women, I also looked at the correlations separately for each gender. As found with the full sample, maladaptive perfectionism was not significantly correlated with either procrastination measure for men or for women ($r$s range from -.09 to .06, $p$s > .50). For adaptive perfectionism, all of the correlations were negative and significant ($r$s ranged from -.43 to -.28, $p$s < .01) except for the relationship between adaptive perfectionism and PAS-S in men, which was negative but not statistically significant, $r = -.21, p = .09$.

**Relationship between Self-Reported and Behavioural Procrastination**

To validate my behavioural measure of procrastination, I examined the correlations between the self-report measures of procrastination and my behavioural measure of procrastination (time spent playing the computer game in the initial practice session). Both procrastination scale scores were modestly but significantly correlated with procrastination behaviour (see Table 1).
Table 1

*Covariances, Means, and Standard Deviations for the Study 1 Variables*

<table>
<thead>
<tr>
<th></th>
<th>Maladaptive Perfectionism</th>
<th>Adaptive Perfectionism</th>
<th>LPS</th>
<th>PAS-S</th>
<th>Game Time</th>
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<tbody>
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<td></td>
<td></td>
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<tr>
<td>2. Adaptive Perfectionism</td>
<td>.48**</td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>3. LPS</td>
<td>-.03</td>
<td>-.37**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. PAS-S</td>
<td>.03</td>
<td>-.27**</td>
<td>.75**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Time Playing Computer Game</td>
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<td>-.17*</td>
<td>.18*</td>
<td>.20*</td>
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<td>25.47</td>
<td>13.3</td>
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</tr>
</tbody>
</table>

*Note. LPS = Lay Procrastination Scale; PAS-S = Procrastination Assessment Scale-Students. *

Perfectionism and Behavioural Procrastination

I expected that higher levels of adaptive perfectionism would be associated with less time playing the computer game in the first practice session, whereas higher levels of maladaptive perfectionism would be associated with more time playing the computer game. To test these hypotheses, I first examined the correlations between adaptive perfectionism, maladaptive perfectionism, and behavioural procrastination (number of seconds spent playing the game at Time 1). As expected, adaptive perfectionism was negatively correlated with behavioural procrastination, $r = -0.17$, $p < .05$, but contrary to my hypothesis, maladaptive perfectionism and behavioural procrastination were not correlated, $r = .04$, $p = .59$.

Next I regressed participants’ behavioural procrastination score (number of seconds playing the computer game at Time 1) onto their centered adaptive perfectionism score and centered maladaptive perfectionism score, a dummy-coded gender variable (men = 1, women = 0), and all of the two- and three-way interactions. The analysis
yielded only a significant interaction between adaptive perfectionism and gender, $B = -15.26$, $t(157) = -2.43$, $p = .02$. To examine the nature of this interaction, I looked at the main effect of adaptive perfectionism separately for men and women. For men, higher adaptive perfectionism was associated with significantly less procrastination behaviour, $B = -18.87$, $t(157) = -3.58$, $p < .001$. For women, although the relationship between adaptive perfectionism and procrastination also was negative, it was not statistically significant, $B = -.37$, $t(157) = -1.18$, $p = .24$ (see Figure 1).

**Figure 1.** The effect of adaptive perfectionism on procrastination behaviour as a function of gender in Study 1.

**Perfectionism and Feedback**

To ensure that my feedback manipulation was successful, I conducted a one-way ANOVA to examine scores on the sadness item of the DES that participants completed after receiving feedback on their first analogy test. The feedback condition main effect was significant, $F(2, 166) = 12.04$, $p < .001$. Therefore, to determine the nature of the differences, I completed a series of independent-samples t tests. Participants who
received negative feedback on the test were sadder ($M = 3.34$, $SD = 1.68$) than were participants in either the control condition who did not receive any feedback ($M = 2.54$, $SD = 1.46$), $t(112) = 2.74$, $p = .007$, or the positive feedback condition ($M = 1.92$, $SD = 1.43$), $t(109) = 4.78$, $p < .001$. In addition, participants in the no feedback condition were sadder than those in the positive feedback condition, $t(107) = 2.21$, $p = .03$. Thus, my feedback manipulation appeared to have the intended affective impact.

To examine how feedback affected the relationship between perfectionism and procrastination behaviour, I regressed participants’ procrastination behaviour for the second practice session (number of seconds they spent playing the computer game in the second practice session) on two dummy-coded feedback variables representing the negative condition versus the control condition (negative = 1, positive = 0 and neutral = 0) and the positive condition versus the control condition (positive = 1, negative = 0, and neutral = 0); a dummy-coded gender variable (women = 0, and men = 1); participants’ centered adaptive perfectionism score, centered maladaptive perfectionism score, and centered post-feedback mood (sadness item of the DES); and all the two-, three-, four-, and five-way interactions among feedback, gender, perfectionism, and mood. Time spent playing the computer game in the first practice session was included as a covariate; therefore, the dependent measure represented changes in procrastination behaviour between Times 1 and 2.

None of the effects involving adaptive perfectionism were significant ($ps > .29$), but a number of significant effects emerged for maladaptive perfectionism including the four-way interaction among maladaptive perfectionism, the negative feedback condition variable, gender, and post-feedback mood, $B = 42.43$, $t(111) = 2.46$, $p < .05$. To interpret
this four-way interaction, I first looked at the simple three-way interaction among maladaptive perfectionism, the negative feedback variable, and post-feedback mood separately for men and women. It was significant only for women, $B = 21.08$, $t(111) = 2.04$, $p < .05$, and not for men, $B = -21.35$, $t(111) = -1.58$, $p = .11$. Consequently, all subsequent follow-up analyses were conducted only for women.

I next looked at the simple two-way interaction between maladaptive perfectionism and post-feedback mood separately in the negative feedback condition and the control condition. It was significant for the negative feedback condition, $B = 21.82$, $t(111) = 2.44$, $p < .05$, but not for the control condition, $B = .74$, $t(111) = .15$, $p = .88$. Thus, all subsequent follow-up analyses were conducted only for the negative feedback condition.

Finally, the simple main effect of post-feedback mood was examined at different levels of maladaptive perfectionism. Specifically, the main effect of post-feedback mood was examined at higher and lower levels of maladaptive perfectionism as recommended by Cohen, Cohen, West, and Aiken (2003). In a regression analysis, main effects are interpreted as the effect of the variable of interest when all other variables are equal to zero. To create a variable representing higher levels of maladaptive perfectionism, one standard deviation was subtracted from each participant’s centered maladaptive perfectionism score. A score of zero on this new variable represents a value of maladaptive perfectionism that is one standard deviation above the mean. The original regression analysis was then conducted replacing the original maladaptive perfectionism variable with this new variable representing higher levels of maladaptive perfectionism. The main effect of post-feedback mood was significant at a higher level of maladaptive
perfectionism, $B = 57.85, t(111) = 2.40, p < .05$. So for women who were higher in maladaptive perfectionism, the sadder they were after receiving negative feedback, the more they increased their procrastination from Time 1 to Time 2. To create a variable representing lower levels of maladaptive perfectionism, one standard deviation was added to each participant’s centered maladaptive perfectionism score. A score of zero on this variable represents a value of maladaptive perfectionism that is one standard deviation below the mean. The original regression analysis was conducted again, this time replacing the original maladaptive perfectionism variable with the variable representing lower levels of maladaptive perfectionism. The main effect of post-feedback mood was not significant at lower levels of maladaptive perfectionism, $B = -70.28, t(111) = -1.87, p = .06$ (See Figure 2 for both simple slope regression lines.)

![Figure 2. The effect of post-feedback mood and maladaptive perfectionism on procrastination change for women who received negative feedback in Study 1.](image-url)
Discussion

The first objective of Study 1 was to examine the procrastination behaviour of adaptive and maladaptive perfectionists in a laboratory task. Consistent with some previous literature (Frost et al., 1990; Kilbert et al., 2005; Seo, 2008), adaptive perfectionism was associated with less self-reported procrastination. Also, as hypothesized, adaptive perfectionism was associated with less behavioural procrastination on the initial task.

The latter relationship was significant only for men although the same trend was found for women. Range restriction may help explain why this relationship was significant only in men. Although the overall range of procrastination behaviour was only slightly larger for men (0 seconds to 300 seconds) than for women (0 seconds to 297 seconds), the inter-quartile range may be more meaningful in this case as it does not include those participants who played the game the whole time or not at all. The inter-quartile range was quite a bit smaller for women (63 seconds) than for men (108 seconds). Also, in general, women procrastinated less ($M = 44.50$, $SD = 74.36$) than men did ($M = 55.83$, $SD = 82.96$).

There are a number of possible explanations for why the behavioural measure of procrastination was only modestly correlated with self-reported procrastination. First, the behavioural measure is specific to procrastinating when preparing for an upcoming test, whereas the self-report scales measure a much wider range of behaviour. The Lay Procrastination Scale is not specific to academic procrastination and measures a general tendency to delay in everyday life. It includes items such as: “When it is time to get up in the morning, I most often get right out of bed,” and “I prefer to leave early for an
appointment.” The Procrastination Assessment Scale—Students is specific to academic procrastination but still covers a wider range of situations such as: “Keeping up with weekly reading assignments,” and “Academic administrative tasks: filling out forms, registering for classes, getting ID card, etc.” Second, the computer game was the only activity available for participants to engage in if they did not want to study. It is possible that this activity was not appealing to some participants who would have procrastinated if a wider range of activities was available. Specifically, women may have demonstrated less initial procrastination behaviour because the computer game may not have been as appealing to them as it was to the men.

The second objective of Study 1 was to examine how the feedback provided on the initial task influenced subsequent procrastination behaviour. Contrary to previous research, maladaptive perfectionism was not associated with self-reported or behavioural procrastination on the initial task; however, it was a significant predictor of procrastination change in women who were upset by the negative feedback they received. Specifically, for women who were higher in maladaptive perfectionism, receiving upsetting negative feedback on the first test resulted in an increase in procrastination behaviour for the second test. This is not an adaptive response to being told that one has not mastered the material and could serve to exacerbate academic problems.

Thus students, at least female students who are higher in maladaptive perfectionism, may show greater procrastination behaviour only in response to setbacks. Applied to an academic setting, female students regardless of their levels of maladaptive perfectionism could be expected to start the academic year with similar study habits. As long as students were meeting their standards and performing well, women who were
higher in maladaptive perfectionism would not be expected to demonstrate greater procrastination behaviour. However, if students were to receive upsetting negative feedback, female students who were higher in maladaptive perfectionism may respond by giving up and decreasing their future study efforts.

The finding that only women and only those higher in maladaptive perfectionism would have a deleterious response to negative feedback is supported by a variety of research. First, men and women react differently to negative feedback. For example, Roberts and Nolen-Hoeksema (1994) provided participants with positive or negative feedback on a cognitive task. They found that women’s self-efficacy increased after positive feedback and decreased after negative feedback. In contrast, the self-efficacy of male participants was not affected by the feedback they received. Women’s satisfaction with how well they performed was affected by the type of feedback they received, whereas male satisfaction was not affected by feedback. In addition, when given vague feedback such as “your performance was below average,” women significantly underestimated how many tasks they had successfully completed, whereas men significantly overestimated.

In a study that utilized actual employee evaluations, women’s self-esteem slightly increased after positive feedback and substantially decreased after negative feedback (Johnson & Helgeson, 2002). The self-esteem of men, however, was not affected by their performance evaluations. In addition, women were more likely than men to view external feedback as being an accurate reflection of their true abilities. The important difference between men and women appears to be that women internalize feedback and take it more personally than men do. Feedback appears to have the power
to change a woman’s self-concept, with negative feedback significantly affecting how competent she feels.

Second, in a similar vein, perhaps maladaptive perfectionists internalize negative feedback, whereas adaptive perfectionists and non-perfectionists do not. It makes intuitive sense that feedback would carry more weight with maladaptive perfectionists when you consider that various subscales (e.g., Socially-Prescribed Perfectionism, Parental Criticism, and Parental Expectations) that make up the maladaptive perfectionism construct are directly concerned with the expectations of others.

Following negative feedback, both adaptive perfectionists (Besser et al., 2004) and maladaptive perfectionists (Frost et al., 1995) experience greater negative affect than do non-perfectionists. Maladaptive perfectionists, however, also appear to experience a change in their self-concept. For instance, following negative feedback, individuals high in maladaptive perfectionism have been shown to experience a decrease in perceived intelligence and self-confidence (Frost et al., 1995), self-esteem (Besser et al., 2008), and self-efficacy (Stoeber, Hutchfield, & Wood, 2008) that is not experienced by individuals low in maladaptive perfectionism.

This research would suggest that women and maladaptive perfectionists are uniquely sensitive to negative feedback and experience a decrease in perceived competence that may not be experienced in other individuals. This decreased sense of competence is a likely explanation for why women high in maladaptive perfectionism and not other comparison groups showed an increase in procrastination behaviour after receiving negative feedback in Study 1.

Indeed, according to the theory of self-regulation, failure creates a discrepancy
between one’s current state and one’s ideal state (Carver, Blaney, & Scheier, 1979). How an individual reacts to failure depends on if the individual believes that he or she can reduce this discrepancy. According to Carver et al. (1979), if the individual has a positive expectancy, he or she responds to failure with continued effort. However, if the individual has a negative expectancy, he or she responds with decreased effort or withdrawal, as I observed with female maladaptive perfectionists.

People’s expectancy about whether or not they can achieve their desired state is reflected by their sense of self-efficacy. Bandura (1986) discusses how self-efficacy contains two components: efficacy expectations and outcome expectations. Efficacy expectations are the belief that one has the ability to perform the behaviours needed to succeed. Outcome expectations are the belief that doing those behaviours will actually result in a positive outcome. Bandura suggests that an individual’s self-efficacy will impact task initiation and persistence, with low self-efficacy being associated with behavioural avoidance.

Various researchers have explored this proposed relationship between efficacy beliefs and procrastination. For example, Tan, Ang, Klassen, Yeo, Wong, Huan, and Chong (2008) found that a lack of self-efficacy, or the belief that one is not able to achieve one’s goals, is strongly associated with procrastination. Tuckman (1991) and Ferrari, Parker, and Ware (1992) also found a significant inverse relationship between self-efficacy and procrastination.

This research further supports my explanation for why women higher in maladaptive perfectionism increased their procrastination behaviour after receiving negative feedback in Study 1. These individuals likely experienced a decrease in
perceived self-efficacy and did not expect that they could perform well on the second test. In turn, these negative performance expectations resulted in task avoidance.

Although I can find strong evidence for expectancy beliefs as an explanation for the observed procrastination behaviour, a separate field of research provides an alternate explanation. I found effects only for women for whom the negative feedback was emotionally distressing; therefore, their procrastination behaviour could be viewed as an attempt at mood repair. Procrastination usually involves choosing to participate in enjoyable activities (such as playing a computer game) over less enjoyable but important activities (such as studying for a test). When people feel upset, they often have a pressing desire to feel better, which shifts their priorities to the present (Tice, Bratslavsky, & Baumeister, 2001). This short-term focus on feeling better can result in the failure of self-control and the participation in activities that one would normally resist such as smoking and drinking. This failure of self-control usually involves choosing short-term rewards in place of, or to the detriment of, longer term goals (Tice & Bratslavsky, 2000). In other words, people in a negative mood will give priority to improving their mood and will engage in activities that are enjoyable (e.g., over-eating) yet destructive to their longer term goals (e.g., maintaining a healthy lifestyle).

In a study directly linking mood and procrastination, Tice et al. (2001) induced a negative mood by having participants imagine that they caused a car accident that resulted in the death of a child. After the mood prime, participants were given time to study for an upcoming test. Participants in the negative mood condition procrastinated more than did participants in the positive mood or the neutral mood conditions. Even though the induced negative mood was not related to their feelings towards the test or
their perceived competence, it still resulted in an increase in procrastination behaviour. Interestingly, when participants were told that procrastinating would not improve their bad mood, the effect disappeared. Further linking procrastination to mood repair, sad participants showed more procrastination behaviour when the distracter tasks were enjoyable rather than boring.

In summary, previous research suggests at least two possible mechanisms responsible for the increase in procrastination behaviour that I observed in Study 1. First, female maladaptive perfectionists who were upset by the negative feedback they received may have become pessimistic about their ability to perform well on the second test and thus they reduced their efforts to study for it. Second, these women, because they were upset, may have procrastinated more simply because they believed that the computer game would make them feel better. To try to determine which of these two possible explanations more likely can account for my results, I manipulated these mechanisms in Study 2.
Chapter 3: Study 2

The purpose of Study 2 was to replicate the findings of Study 1 as well as to explore two potential mechanisms for the observed increase in procrastination behaviour by women who were higher in maladaptive perfectionism and who received upsetting negative feedback. For the latter purpose, I used priming to manipulate either participants’ outcome expectancies or their mood.

I hypothesized that one reason the women who were higher in maladaptive perfectionism increased the time they spent playing the computer game after receiving negative feedback is that they withdrew effort from studying because they were pessimistic about their chances of performing well on the second task. Maladaptive perfectionism is positively correlated with pessimism (Chang, 2008), and pessimists’ responses to setbacks are far less adaptive than optimists’. For example, optimistic individuals tend to have higher expectations for their achievement and show greater persistence (Chemers, Hu, & Garcia, 2001) even when progress is slow and the tasks are difficult (Carver et al., 1979; Scheier, Weintraub, & Carver, 1986). Pessimists, in contrast, respond to challenges using strategies such as denial, cognitive avoidance, behavioural avoidance (such as procrastination), and even substance abuse (Carver, Scheier, & Weintraub, 1989).

Optimists tend to put greater effort towards achieving their goals because they see their desired outcomes as achievable (Nes, Evans, & Segerstrom, 2009; Thompson & Gaudreau, 2008). Pessimists, on the other hand, use disengagement coping methods because their negative expectations result in the belief that any effort spent on a task is pointless (Gaudreau & Blondin, 2004; Thompson & Gaudreau, 2008). Not surprisingly,
then, compared to pessimism, optimism is associated with a number of positive academic outcomes including a higher GPA, higher self-reported achievement, more positive evaluations from instructors, less stress, and lower dropout rate (Chemers et al., 2001; Nes et al., 2009).

Most studies have focused on dispositional optimism, but several researchers have successfully manipulated state optimism or temporary positive outcome expectancies. For example, Fosnaugh, Geers, and Wellman (2009) found that participants who completed an optimism scrambled sentence task had higher optimism scores than did those who completed a neutral scrambled sentence task. Furthermore, the prime increased levels of optimism without simultaneously affecting participants’ mood state or self-esteem. Ebel-Lam (2004) also demonstrated that an optimism prime affected expectations but not mood.

The latter findings are important for the current study because an alternate explanation for why women higher in maladaptive perfectionism increased the time they spent playing the video game after receiving negative feedback is mood repair. Previous research has demonstrated that a negative mood is associated with procrastination behaviour (Tice et al., 2001). Indeed, in Study 1, only the female maladaptive perfectionists who were actually upset about the negative feedback they received increased their procrastination behaviour. To examine this second hypothesis, a positive mood prime was also included in Study 2.

In addition to the positive mood prime negating the need for participants to raise their mood, research has shown that people in a positive mood are better able to exhibit the self-control needed to stay on task, even if the task is unpleasant or boring (e.g., Isen
Furthermore, happy individuals are better at delaying gratification and are more likely than sad individuals to choose a delayed but preferable reward over an immediate but inferior reward (Moore, Clyburn, & Underwood, 1976). Thus, students in a good mood should be more likely to focus on their longer term goal of doing well on the test and forgo the immediate enjoyment of playing a computer game in order to study for the second test.

Examining the effects of the optimism prime compared to the positive mood prime in Study 2 should shed some light on the mechanism responsible for the increase in procrastination behaviour seen in Study 1. If the optimism prime is more effective than the positive mood prime at preventing an increase in procrastination behaviour, this result would support the explanation that reduced self-efficacy and low performance expectations are driving the increase in procrastination behaviour seen in Study 1. Alternatively, if the positive mood prime is more effective than the optimism prime, this result would provide support for the mood repair explanation.

Method

Participants

Participants were 138 Queen’s University students. One hundred seventeen of these participants (77 women) were enrolled in Introduction to Psychology (PSYC 100). Due to difficulty recruiting male participants from PSYC 100, 21 men were recruited from the engineering department. The mean age of participants was 18.71 years ($SD = 1.5$). In exchange for their participation, students enrolled in PSYC 100 received 1% towards their final grade in the course or $10. Engineering students received $10 for their participation.
Utilizing GPOWER software, I conducted a multiple regression power analysis with an effect size estimate of $f^2 = .085$ (as supported by previous research as well as the observed effect size for the four-way interaction in Study 1), alpha level = .05, power = .08, and four predictors. This analysis recommended a sample size of $N = 146$.

Unfortunately, I was only able to recruit 138 participants for Study 2, which could make it more challenging to find the hypothesized effects.\(^1\)

**Materials** (See Appendix D for all experimental materials)

**Perfectionism measures.** As in Study 1, participants completed the MPS-F and MPS-HF. Study 2 subscale means and standard deviations (see Appendix E) were comparable to those found in a similar sample of university students (Martin et al., 1996) for the MPS-F but were slightly higher than those in a similar sample of European North American undergraduate students (Castro & Rice, 2003) for the MPS-HF.

A principal axis factor analysis of the six MPS-F subscales and the three MPS-HF subscales replicated the two-factor solution found by Frost et al. (1993). (See Appendix F for the factor loadings.) The MPS-F and the MPS-HF were combined to form the Adaptive Perfectionism and Maladaptive Perfectionism measures. (See Table 2 for the correlations, means, and standard deviations of the two indices.) In addition, the “Sad, Downhearted, Blue” item from the DES was used as a measure of temporary sadness after performance feedback, whereas the “Merry/Gleeful/Amused” item was used as a positive mood manipulation check.

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\(^1\) The power analysis that was conducted for Study 2 utilized four predictors. I conducted an alternate power analysis using five predictors as the results of Study 2 involved a five-way interaction rather than the hypothesized four-way interaction. This analysis recommended a sample size of $N = 157$. The fact that I found significant effects in Study 2 with only 138 participants suggests that I did have sufficient power and that the observed effect is more robust than the small to medium effect size estimate that I utilized for the power analysis.
**Procrastination measure.** The measure of procrastination was the number of seconds that participants spent playing the computer game during a five-minute study period. (See Table 2 for the mean and standard deviation for the measure at Time 1.)

**Procedure**

The procedure was similar to Study 1 with a few changes. When participants completed their first verbal analogy test, they all received negative feedback (i.e., two questions correct out of 10). After they completed the DES and the satisfaction questions about their test performance, they underwent a priming manipulation.

Participants were randomly assigned to be exposed to a positive mood prime, optimism prime, or neutral prime. For the prime manipulation, they were told that they would be taking a break from the verbal analogy study to complete an unrelated activity that would help another graduate student in the department pilot test materials for his thesis. To increase realism, participants were given an audio tape on which a male graduate student provided the following instructions:

Hi, my name is Dave Kendall, and I’m working on my doctoral dissertation. I’d like to thank you for helping me pre-test these materials for later experiments. These experiments will be concerned with the way that people make lexical decisions and the ease with which different types of sentence constructions are formed and recognized. Certain types of sentence constructions are easier to form and more likely to be used because they have a better fit with the way we think naturally, especially when we are trying to express important thoughts about ourselves. For this exercise, please open the folder that was placed on your desk. You will see 18 sets of scrambled words. For each set, a grammatical sentence
can be formed using either four or five of the words. For each set, please write your sentence on the line and cross out the one word you do not use.

Participants in the positive mood condition received 18 scrambled sentences that consisted of 14 positive mood sentences and 4 neutral sentences. The sentences were adapted from the Velten Mood Induction Statements (Velten, 1968). The positive statements that were chosen received high positive valence ratings in a recently obtained university sample (Jennings, McGinnis, Lovejoy, & Stirling, 2000). The positive statements included items such as: “Life is a blast” and “Nothing can depress me.”

Participants in the neutral condition received 18 scrambled sentences that were all neutral. Some of the neutral statements were altered from those used in the Velten Mood Induction Statements to be more relevant to my sample (e.g., “New York City is in New York state” became “Toronto is in Ontario”), whereas other neutral statements were created for the current experiment. The constructed statements did not pertain to a consistent construct and were evaluatively neutral (e.g., “The ball is blue”).

Those in the optimism prime condition received a set of 18 scrambled sentences that consisted of 14 optimism statements and 4 neutral statements. This optimism prime was developed by Weary and Reich (2001) and also used in previous research by Ebel-Lam (2004) whose pilot study confirmed that the prime does not affect mood. Example items included “Our team will win” and “I will get a raise.”

After completing the scrambled sentences, participants completed a measure of their current mood state and were informed that they would now be continuing with the verbal analogy study. That is, participants learned that they would have a chance to study or play the game again and complete a second verbal analogy test to try to improve their
score. All participants were told that they would receive their score on the second test at the end of the experiment. Finally participants completed the MPS-F and the MPS-HF. When they finished, participants were debriefed, thanked for their time, and granted 1.0 credit or given $10.

Results

Study 1 Replication: Perfectionism and Procrastination Behaviour

In Study 1 adaptive perfectionism was negatively correlated with time spent playing the computer game in the initial practice session. Contrary to expectations, this correlation was not significant in Study 2. (See Table 2 for the correlations). In Study 1, I also found a significant interaction between adaptive perfectionism and gender, but this interaction was not significant in Study 2, $B = .62, t(130) = .78, p = .44$.

Table 2

<table>
<thead>
<tr>
<th>Correlations, Means, and Standard Deviations for the Study 2 Variables</th>
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<tbody>
<tr>
<td></td>
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<tr>
<td>Maladaptive Perfectionism</td>
</tr>
<tr>
<td>-----------------------------------------------</td>
</tr>
<tr>
<td>1. Maladaptive Perfectionism</td>
</tr>
<tr>
<td>2. Adaptive Perfectionism</td>
</tr>
<tr>
<td>3. Time Playing Computer Game at Time 1 (in sec)</td>
</tr>
</tbody>
</table>

M 114.75 177.52 68.07
SD 26.31 24.64 92.04

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

For the second practice session, in Study 1, I found a significant interaction such that for women who were higher in maladaptive perfectionism and who received negative feedback, the more upset they were by this feedback, the more they increased their procrastination. The equivalent analysis can be done in Study 2 by examining only those participants who received the neutral prime. The same trend was found for women in
Study 2 (see Figure 3) although the interaction among maladaptive perfectionism, gender, and post-feedback mood was not significant, $B = -.89$, $t(43) = -1.47$, $p = .15$. The failure to replicate this effect could possibly be explained by lower power. That is, I had only 52 participants in the neutral condition in Study 2 compared to 167 participants in Study 1.

![Figure 3](image_url)

Figure 3. Change in procrastination behaviour for women who received the neutral prime in Study 2.

**Condition Randomization**

To ensure that participants were not differentially affected by the prime and that randomization was successful, a series of one-way ANOVAs were conducted with prime condition (neutral, positive, or optimism prime) as the between-subjects factor and adaptive perfectionism, maladaptive perfectionism, and procrastination (time spent playing the computer game in the first practice session) as the dependent measures. The only significant difference was for behavioural procrastination, $F(2, 136) = 3.03$, $p = .05$ (all other $ps > .08$). To determine the nature of the differences, I completed a series of independent-samples $t$ tests. Participants who received the optimism prime were higher on initial behavioural procrastination ($M = 95.17$, $SD = 104.77$) than were those who
received the neutral prime \((M = 49.13, SD = 83.67), t(92) = 2.37, p = .02\), but they did not differ from those who received the positive mood prime \((M = 63.84, SD = 84.86), t(83) = -1.52, p = .13\). Positive mood prime participants also did not differ from those who received the neutral prime, \(t(93) = -.85, p = .40\).

**Effectiveness of Prime Manipulation**

To ensure that the positive mood prime was successful, I conducted an ANOVA to compare the scores on the “Merry/Gleeful/Amused” item of the DES for participants in the different prime conditions. Although the effect of the prime was only marginal, \(F(2, 136) = 2.54, p = .08\), I still conducted a series of independent-samples \(t\) tests to determine if any of the conditions differed. As expected, participants who received the positive mood prime reported more positive affect \((M = 3.53, SD = 1.75)\) than did those who received the neutral prime \((M = 2.79, SD = 1.46), t(93) = 2.27, p = .03\), but they did not differ from those who received the optimism prime \((M = 3.07, SD = 1.64), t(83) = 1.26, p = .21\). As intended and consistent with previous research, the neutral and optimism prime conditions did not yield mood differences, \(t(92) = -.88, p = .38\).

**Perfectionism and Feedback**

To examine how the prime condition affected the relationship between perfectionism and procrastination behaviour after negative feedback, I regressed participants’ procrastination behaviour for the second practice session (number of seconds they spent playing the computer game in the second practice session) on two dummy-coded prime variables representing the optimism prime versus the neutral prime (optimism = 1, positive mood = 0, and neutral = 0) and the positive mood prime versus the neutral prime (positive mood = 1, optimism = 0, and neutral = 0); a dummy-coded
gender variable (women = 0, and men = 1); participants’ centered adaptive perfectionism score, centered maladaptive perfectionism score, and centered post-feedback mood (sadness item of the DES); and all the two-, three-, four-, and five-way interactions among prime, gender, perfectionism, and mood. Time spent playing the computer game in the first practice session was included as a covariate; therefore, the dependent measure represented changes in procrastination behaviour between Times 1 and 2. This analysis yielded a number of significant effects which were qualified by a five-way interaction among adaptive perfectionism, maladaptive perfectionism, the dummy-coded optimism prime variable, gender, and post-feedback mood, $B = .17, t(136) = 2.25, p = .03$.

To interpret this five-way interaction, I first looked at the simple four-way interaction among maladaptive perfectionism, the dummy-coded optimism prime variable, post-feedback mood, and gender at both higher and lower levels of adaptive perfectionism (i.e., one $SD$ above and below the centered mean) as recommended by Cohen et al. (2003). The interaction was significant at lower levels of adaptive perfectionism, $B = -8.23, t(136) = -1.99, p = .04$, but not at higher levels of adaptive perfectionism, $B = -4.55, t(136) = -1.06, p = .29$. Thus all subsequent follow-up analyses were conducted only at lower levels of adaptive perfectionism.

I next looked at the simple three-way interaction among maladaptive perfectionism, the dummy-coded optimism prime variable, and post-feedback mood separately for men and women. The interaction was significant for women, $B = 8.83, t(136) = 2.77, p = .01$, but not for men, $B = -2.69, t(136) = 0.94, p = .35$. Thus, all subsequent follow-up analyses were conducted only for women.

Next I examined the simple two-way interaction between the dummy-coded
optimism prime variable and post-feedback mood at higher and lower levels of maladaptive perfectionism (i.e., one SD above and below the centered mean). This interaction was significant at higher levels of maladaptive perfectionism, $B = 208.51$, $t(136) = 2.06$, $p = .04$, as well as at lower levels of maladaptive perfectionism, $B = -248.74$, $t(136) = -2.68$, $p = .009$.

Next, for both higher and lower levels of maladaptive perfectionism, I looked at the main effect of post-feedback mood for both the optimism prime and the neutral prime. At higher levels of maladaptive perfectionism, the main effect of post-feedback mood was significant for the optimism prime, $B = -164.68$, $t(136) = -2.16$, $p = .03$, but not the neutral prime, $B = 43.83$, $t(136) = .67$, $p = .51$. (See Figure 4 for both simple slope regression lines.) At lower levels of maladaptive perfectionism, the main effect of post-feedback mood was also significant for the optimism prime, $B = 178.33$, $t(136) = 2.185$, $p = .03$, but not the neutral prime, $B = -70.41$, $t(136) = -1.60$, $p = .11$. (See Figure 5 for both simple slope regression lines).

In summary, the optimism prime resulted in decreased procrastination on a subsequent task for women who were higher in maladaptive perfectionism, lower in adaptive perfectionism, and upset about receiving negative feedback on an initial task. In contrast, the optimism prime resulted in increased procrastination on a subsequent task for women who were lower in maladaptive perfectionism, lower in adaptive perfectionism, and upset about receiving negative feedback on an initial task.
Figure 4. The effect of post-feedback mood and prime condition on change in procrastination behaviour for women who are lower in adaptive perfectionism and higher in maladaptive perfectionism.

Figure 5. The effect of post-feedback mood and prime condition on change in procrastination behaviour for women who are lower in adaptive perfectionism and lower in maladaptive perfectionism.
Discussion

The first purpose of Study 2 was to replicate the results of Study 1. I was only somewhat successful in replicating these results. For instance, consistent with Study 1, maladaptive perfectionism and procrastination behaviour on the initial task were not related. Conversely, I did not replicate the relationship between adaptive perfectionism and procrastination behaviour on the initial task. However, previous research on the relationship between adaptive perfectionism and procrastination has been inconsistent. Studies have shown a negative association between adaptive perfectionism and procrastination (Seo, 2008), a negative association in one gender only (Frost et al., 1990; Kilbert et al., 2005), or no association at all (Flett et al., 1992; Onwuebuzie, 2000). Future research is needed to clarify this relationship and examine potential moderators that might explain the discrepant findings.

The primary finding from Study 1 was that when women who were higher in maladaptive perfectionism received negative feedback on the first task, the more upset they were by this feedback, the more they increased their procrastination on the second task. The same trend was found in Study 2. It was not statistically significant, but this difference may have been due to reduced power because I had fewer participants in the neutral condition in Study 2 compared to the full sample in Study 1.

The second purpose of Study 2 was to utilize two prime conditions (optimism and positive mood) to compare two potential mechanisms (low expectations or mood repair) to account for the increase in procrastination behaviour seen in Study 1. Although I neglected to include a measure of state optimism in this study to confirm the effectiveness of the optimism prime, Fosnaugh et al. (2009) found that a similar priming
technique resulted in higher optimism scores on the Revised Life Orientation Scale. Weary and Reich (2001) also found that a similar priming technique was successful in temporarily shifting individuals’ expectancies about the future.

In the current study, the only significant findings involved the optimism prime. More specifically, when exposed to an optimism prime, women who were higher in maladaptive perfectionism and lower in adaptive perfectionism responded to upsetting negative feedback by decreasing their procrastination behaviour. This effect was similar to what I expected to find although I did not anticipate that lower adaptive perfectionism would be a significant factor for predicting procrastination change in Study 2 as it was not a significant factor in Study 1. A possible reason why adaptive perfectionism played a role in Study 2 and not Study 1 could be that the range of adaptive perfectionism scores were higher in Study 2 (124-248) than in the comparable sample of participants who received negative feedback in Study 1 (113-244). Participants in Study 2 also had a higher mean adaptive perfectionism score \( M = 177.52, SD = 24.64 \) compared to the participants in Study 1 who received negative feedback \( M = 170.48 \) seconds, \( SD = 26.19 \).

Although the optimism prime was successful in reversing the increase in procrastination behaviour seen in female maladaptive perfectionists who were upset about receiving negative feedback and the positive mood prime was not, I cannot fully rule out mood as a contributing mechanism. The optimism and positive mood prime conditions did not differ statistically in their effect on participants’ moods although only participants who received the positive mood prime were significantly happier than participants who received the neutral prime. These results may seem contrary to previous
research in which optimism primes did not increase positive affect, but those studies were not comparing the effects of the optimism prime to a positive mood prime. Consistent with previous research, I also found that the optimism prime did not differ from a neutral condition on positive mood, but it also did not differ significantly from a positive mood prime, which the previous studies did not examine as a comparison group. Completely disentangling the effects of optimism from positive mood may not be possible, and future research should explore other means of priming these two constructs to determine if their effects can be separated.

The optimism prime had a surprising effect for women lower in maladaptive perfectionism and lower in adaptive perfectionism (non-perfectionists). That is, when exposed to an optimism prime after receiving negative feedback, they actually increased their procrastination behaviour. Lay (1988) provides a potential explanation for the opposing effects of the optimism prime. He proposed two types of procrastinators: a pessimistic one and an optimistic one. Pessimistic procrastinators delay because they expect to do poorly on the task and are afraid of failure. Optimistic procrastinators, on the other hand, are comfortable putting off work for more favourable activities because they are confident that they will succeed at the task when they do get around to it.

To the best of my knowledge, the link between perfectionism and type of procrastination (optimistic vs. pessimistic) has never been examined. The results of Study 2 would suggest that procrastination behaviour shown by women higher in maladaptive perfectionism and lower in adaptive perfectionism after upsetting feedback was pessimistic procrastination. For these individuals, an optimism prime was successful in reversing the increase in procrastination behaviour seen after negative feedback. In other
words, the optimism prime helped to increase self-efficacy and foster a more positive performance expectancy that encouraged these participants to respond to failure with increased effort rather than withdrawal.

Previous research has shown that individuals low in maladaptive perfectionism do not experience a decrease in self-efficacy following failure feedback (Stoeber et al., 2008). Thus perhaps women who were lower in maladaptive perfectionism and lower in adaptive perfectionism (non-perfectionists) engaged in optimistic procrastination when exposed to an optimism prime. That is, priming optimism in individuals who did not have diminished expectations may have created a sense of unrealistic optimism or the belief that they could perform well even without putting in the effort to study.
Chapter 4: General Discussion

The first goal of this research project was to examine how adaptive and maladaptive perfectionism influenced actual procrastination behaviour on a laboratory task. The vast majority of research looking at the impact of perfectionism on procrastination behaviour has utilized only scale scores, and in this research, the relationship between adaptive perfectionism and procrastination has been inconsistent (Flett et al., 1992; Frost et al., 1990; Kilbert et al., 2005; Onwuebuzie, 2000; Seo, 2008).

The results of the two studies in the current investigation are also inconsistent. More specifically, in Study 1, I found a significant negative correlation between adaptive perfectionism and scores on two procrastination inventories, the LPS and the PAS-S, and actual procrastination behaviour on the first test, but the latter was significant only in men although the same trend was found in women. In Study 2, however, I did not find a significant relationship between adaptive perfectionism and actual procrastination behaviour on the first test. More work is needed to explore potential moderators that could help explain why the negative relationship between adaptive perfectionism and procrastination is observed only some of the time.

Previous research has consistently linked maladaptive perfectionism to higher scores on procrastination inventories (Flett et al., 1992; Frost et al., 1990; Kilbert et al., 2005; Onwuebuzie, 2000), but this relationship was not significant in Study 1. Furthermore, maladaptive perfectionism was not related to procrastination behaviour during the initial study session in either Study 1 or 2. Any explanation for the failure to replicate this finding would be purely speculative at this point.

The second goal of this research program was to see how feedback on the initial
test influenced procrastination behaviour on the second test. In Study 1, I found that the procrastination behaviour of adaptive perfectionists was not affected by positive or negative feedback. Flett and Hewitt (2006) suggest that the negative effects of adaptive perfectionism may become apparent only when an individual is faced with repeated setbacks over time. Thus, in the future, researchers may need to track the behaviour of adaptive perfectionists over a longer period of time. Perhaps a longitudinal investigation could follow adaptive perfectionists’ achievement over a school year to see if their study habits are affected by how satisfied they are with their achievements on various course objectives.

Positive feedback did not have a significant impact on the procrastination behaviour of maladaptive perfectionists. As for negative feedback, women who were higher in maladaptive perfectionism and upset about the feedback they received increased their procrastination behaviour. In an academic environment, negative feedback is a signal to increase one’s study efforts. Women with higher levels of maladaptive perfectionism showed the opposite response to negative feedback and decreased their study effort. This response is clearly maladaptive because it would further exacerbate academic problems.

Thus based on Study 1, maladaptive perfectionism does not always lead to procrastination behaviour, and the relationship between these two constructs may be more complicated than what is suggested by previous research. In fact, maladaptive perfectionism may be a risk factor for procrastination only when individuals are given a reason to believe that they cannot succeed. For instance, maladaptive perfectionists likely would not procrastinate on course work unless they are confronted with their poor
performance on a course objective.

The third goal of this research program was to determine the potential mechanism responsible for the harmful increase in procrastination behaviour shown in female maladaptive perfectionists after failure feedback. Previous research has demonstrated that women and maladaptive perfectionists experience a decrease in self-efficacy following failure feedback that is not experienced by men or those low in maladaptive perfectionism (Besser et al., 2008; Frost et al., 1995; Johnson at al., 2002; Roberts et al., 1994; Stoeber et al., 2008). As such, a likely explanation for why only these individuals increased their procrastination behaviour after negative feedback was a diminished sense of self-efficacy and low performance expectations.

An alternate explanation for the observed increase in procrastination behaviour was mood repair as negative mood has been previously demonstrated to result in increased procrastination behaviour (Tice et al., 2001). In both Study 1 and Study 2, only the female maladaptive perfectionists who were emotionally distressed by the feedback they received increased their procrastination behaviour. As such these individuals may have been playing the video game simply because they thought it would be enjoyable and help to improve their low mood.

In Study 2, I utilized two priming conditions (optimism and positive mood) to determine which associated mechanism (low expectations or mood repair) was responsible for the increase in procrastination behaviour seen in female maladaptive perfectionists after upsetting negative feedback. I found that only the optimism prime was successful in reversing the increase in procrastination behaviour seen in these individuals. This provided additional empirical support for decreased self-efficacy and
low performance expectations as the mechanism responsible for observed procrastination behaviour.

Unexpectedly, the optimism prime actually resulted in an increase in procrastination behaviour in women who were lower in maladaptive perfectionism and upset about receiving negative feedback. Research has demonstrated that individuals low in maladaptive perfectionism do not experience a decrease in self-efficacy after failure feedback (Stoeber et al., 2008). Perhaps priming optimism in individuals who already had a healthy level of self-efficacy resulted in unrealistic optimism, which can prevent one from taking the steps needed to succeed (Oettingen, 1996).

The results of Study 2 provide additional support for the idea that procrastination behaviour can be optimistic or pessimistic (Lay, 1988). Likely the procrastination behaviour observed in women higher in maladaptive perfectionism after upsetting negative feedback was pessimistic procrastination, whereas the procrastination behaviour seen in women lower in maladaptive perfectionism after the optimism prime was optimistic procrastination. The current research would suggest that when intervening with student procrastinators, it is important to understand which type of procrastination behaviour is being demonstrated because strategies that would prove helpful to pessimistic procrastinators (such as optimism) may actually backfire for optimistic procrastinators.

Limitations

Although this research program helps to clarify the relationship between perfectionism and procrastination behaviour, it is not without limitations. One of the main limitations with this research program is that it was difficult to compare participants
in Study 1 with participants in Study 2. The majority of the participants were introductory psychology students who participated in the studies for extra credit towards their course. These students were given eight months to participate in research to collect these extra credits. Participants who completed their credits early in the year were more likely to be in Study 1 than Study 2 and may have been people who were less likely to procrastinate in general. In contrast, participants who completed their credits later in the year were more likely to be in Study 2 than Study 1 and may have been higher in procrastination in general because they took longer to get their credits completed.

Unfortunately, due to time constraints, I did not include the self-reported measures of procrastination in Study 2, so I cannot make these comparisons directly. However, I did find that participants in Study 2 had a mean procrastination time of 68.07 seconds ($SD = 92.04$) at Time 1, whereas participants in Study 1 had a much lower mean of 48.67 seconds ($SD = 77.67$). An independent-samples $t$-test confirmed that this difference was significant, $t(303) = 1.99, p = .05$. The two samples also may have differed on other constructs that were not assessed in my studies, but that could have affected my results.

In addition, due to a lack of men enrolled in introductory psychology, I had to recruit men from the engineering department for Study 2. As these participants were older, they may have differed in important ways from the men (and women) in introductory psychology. Indeed, the male introductory psychology students in Study 2 had a mean procrastination time of 87.4 seconds ($SD = 91.84$) that was more than twice as long as the male engineering students who had a mean procrastination time of only 35.24 seconds ($SD = 52.47$).

These differences between the participants in Study 1 and Study 2 are a potential
explanation for why I was not able to fully replicate Study 1. My experience can serve as a word of caution for other researchers studying procrastination behaviour that they should make sure that the timing of their studies is not confounded with their participants’ natural procrastination behaviour.

Another limitation of this study was my definition of behavioural procrastination. Procrastination was defined as the amount of time participants spent playing the computer game instead of studying for the test. Although this definition captures the act of replacing a high priority activity with a low priority activity, it does not capture delaying studying to a later time. That is, I did not keep track of when participants were studying and playing the video game, only how long they spent doing each activity. For example, an individual who studied for four minutes and then played the video game for one minute would be scored the same as an individual who played the game for one minute and then studied for four minutes. Only future research can determine if such a distinction is important for understanding the relationship between perfectionism and procrastination.

**Conclusion**

At least three conclusions can be drawn from this research. First, this research demonstrates that although the relationship between adaptive perfectionism and procrastination behaviour continues to be elusive, negative feedback does not appear to have an adverse effect on the study habits of adaptive perfectionists, at least in the short term. Second, this research suggests that the relationship between maladaptive perfectionism and procrastination behaviour may not be as simple as previously believed and that female maladaptive perfectionists may show greater procrastination behavior.
only in response to setbacks. Third, I found support for the hypothesis that decreased self-efficacy and low performance expectations were responsible for the increased procrastination behaviour observed in female maladaptive perfectionists who were upset by negative feedback. Unexpectedly, the optimism prime had adverse effects for women lower in maladaptive perfectionism. The opposing effects of the optimism prime lend credence to the idea that procrastination can be either pessimistic or optimistic in nature, and that interventions for procrastination may need to be tailored appropriately.
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Appendix A:

Study 1 Experimental Materials
LETTER OF INFORMATION & CONSENT TO ACT AS A HUMAN RESEARCH
SUBJECT: ANALOGY

Kristen Blackler, B.A., and Jill A. Jacobson, Ph.D.
Department of Psychology, Queen’s University

NAME OF PARTICIPANT (please print): ____________________________________

PURPOSE OF THE STUDY: I have been asked to participate in a research project designed to investigate the relationship between various personality factors and verbal reasoning ability.

PROCEDURE: If I agree to participate, the following will occur: I complete a verbal reasoning test along with various personality measures. Participation will take approximately 1 hour, and I will receive 1.0 credit for my participation.

RISKS: No risks are anticipated; however, some questions may seem personal in nature or may make me feel uncomfortable. If there is something that makes me uncomfortable, I understand that I have the right to refuse to answer any questions or withdraw from the study by letting the experimenter know I do not wish to continue, at any time and without penalty. I also understand that the questionnaires included in this study are for research purposes only. They are not meant to diagnose a psychological disorder or be in any way meant to determine whether or not I need psychological treatment. If answering any of the questions in this study has raised concerns for me, and/or if I would like to speak to a psychologist about a psychological or emotional issue, I understand that I may contact Health, Counseling, and Disability Services at 613-533-2506.

BENEFITS: I will receive 1.0 credit for my Psychology 100 course through the Queen’s University Psychology subject pool for participation. I will also have the opportunity to learn more about social-personality psychology and research in general.

CONFIDENTIALITY: I understand that any information that I provide will remain entirely confidential and will be stored in a locked cabinet in a secured building. I hereby authorize the use of all records and personal data derived from this experiment for research purposes. I understand that any information derived from this research project that personally identifies me will not be voluntarily released or disclosed by the researchers without my separate consent, except as specifically required by law.

IF I HAVE QUESTIONS: Any questions about study participation may be directed to Dr. Jill Jacobson at 613-533-2847. Any ethical concerns about the study may be directed to the Chair of the General Research Ethics Board at 613-533-6081 or Chair.GREB@queensu.ca.

VOLUNTARY PARTICIPATION: By signing below, I indicate that I have read this Letter of Information and Consent Form and understand the nature of this study. In addition, the experimenter has answered my questions satisfactorily. I know that I may refuse to answer any questions or discontinue my involvement at any time without penalty. My signature below indicates that I have read the information in this form and consent to participate in this study voluntarily.

____________________________________________ ________________________
SIGNATURE OF PARTICIPANT     DATE

This study has been granted clearance according to the recommended principles of Canadian ethics guidelines and Queen’s policies.
The purpose of the experiment is not only for us to collect data, but also for you to learn what psychology research is like. It gives you a chance to see how experiments really work and an opportunity to learn how we test hypotheses.

We gave you only a brief idea at the beginning of the study of what the experiment's purpose. Sometimes when we are studying how people think about various issues (as in this experiment), we don't give people a full description of what we are studying. That way we are able to get natural responses. Not every psychology study does this. However, there are a few things about this experiment that we would like to explain.

In this study, you were given two opportunities to study for and complete a verbal analogy test. We were interested in how perfectionism, mood, and satisfaction with test performance interact to predict preparation for a subsequent test. The test you received was made up of practice questions from the SAT Reasoning Test and the Graduate Record Exam. The computer kept track of the time you spent studying as well as playing the video game (our behavioural measure of procrastination). We hypothesized that higher levels of perfectionism would initially be associated with more time studying. However, we believed that if highly perfectionistic students were dissatisfied with their performance on the first test, they would procrastinate more and not perform as well on the second test.

We would appreciate it if you would not reveal the purpose and hypotheses of this study to others as this may bias their responses if they participate in this study.

The questionnaires included in this study were for research purposes only. They were not meant to diagnose a psychological disorder or be in any way meant to determine whether or not you needed psychological treatment. If answering any of the questions in this study raised concerns for you and/or if you would like to speak to a psychologist about a psychological or emotional issue, please contact Health, Counseling, and Disability Services at 613-533-2506. In addition, we have a treatment referral list available for your convenience. Please ask the experimenter, and we will provide you with this list.

Any questions about study participation may be directed to Dr. Jill Jacobson at 613-533-2847. Any ethical concerns about the study may be directed to the Chair of the General Research Ethics Board at 613-533-6081 or Chair.GREB@queensu.ca.

If you are interested in this area of research, you may wish to read the following reference:

Personality and Social Psychology Review, 10, 295–319

Thank you for participating! Your assistance with this research is greatly appreciated.

Kristen Blackler                 Jill A. Jacobson
M.Sc. Candidate                Associate Professor
**Multidimensional Perfectionism Scale (MPS-Frost)**

Instructions: Please select the option that best reflects your opinion, using the rating system below.

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<th>Disagree</th>
<th>Neither Agree nor Disagree</th>
<th>Agree</th>
<th>Strongly Agree</th>
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<td>0</td>
<td>0</td>
<td>0</td>
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<tr>
<td>2.</td>
<td>Organization is very important to me</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
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<tr>
<td>3.</td>
<td>As a child, I was punished for doing things less than perfectly</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>4.</td>
<td>If I do not set the highest standards for myself, I am likely to end up a second-rate person</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>5.</td>
<td>My parents never tried to understand my mistakes</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>6.</td>
<td>It is important to me that I be thoroughly competent in everything I do</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>7.</td>
<td>I am a neat person</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>8.</td>
<td>I try to be an organized person</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>9.</td>
<td>If I fail at work/school, I am a failure as a person</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>10.</td>
<td>I should be upset if I make a mistake</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>11.</td>
<td>My parents wanted me to be the best at everything</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>12.</td>
<td>I set higher goals for myself than most people</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>13.</td>
<td>If someone does a task at work/school better than me, then I feel like I failed the whole task</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>14.</td>
<td>If I fail partly, it is as bad as being a complete failure</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>15.</td>
<td>Only outstanding performance is good enough in my family</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>16.</td>
<td>I am very good at focusing my efforts on attaining a goal</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>17.</td>
<td>Even when I do something very carefully, I often feel that it is not quite done right</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>18.</td>
<td>I hate being less than the best at things</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>19.</td>
<td>I have extremely high goals</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>20.</td>
<td>My parents have expected excellence from me</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>21.</td>
<td>People will probably think less of me if I make a mistake</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>22.</td>
<td>I never felt like I could meet my parents' expectations</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>23.</td>
<td>If I do not do as well as other people, it means I am an inferior human being</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>24.</td>
<td>Other people seem to accept lower standards from themselves than I do</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>25.</td>
<td>If I do not do well all the time, people will not respect me</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>26.</td>
<td>My parents have always had higher expectations for my future than I have</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>27.</td>
<td>I try to be a neat person</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>28.</td>
<td>I usually have doubts about the simple everyday things I do</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>29.</td>
<td>Neatness is very important to me</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>30.</td>
<td>I expect higher performance in my daily tasks than most people</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>31.</td>
<td>I am an organized person</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>32.</td>
<td>I tend to get behind in my work because I repeat things over and over</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>33.</td>
<td>It takes me a long time to do something 'right'</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>34.</td>
<td>The fewer mistakes I make, the more people will like me</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>35.</td>
<td>I never felt like I could meet my parents' standards</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
**LPS- Lay Procrastination Scale**

Instructions: People may use the following statements to describe themselves. For each statement, decide whether the statement is uncharacteristic or characteristic of you using the following 5 point scale. Note that the 3 on the scale is Neutral – the statement is neither characteristic nor uncharacteristic of you.

<table>
<thead>
<tr>
<th></th>
<th>Extremely Uncharacteristic</th>
<th>Moderately Uncharacteristic</th>
<th>Neutral</th>
<th>Moderately Characteristic</th>
<th>Extremely Characteristic</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>I often find myself performing tasks that I had intended to do days before.</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2.</td>
<td>I do not do assignments until just before they are to be handed in.</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>3.</td>
<td>When I am finished with a library book, I return it right away regardless of the date it is due.</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>4.</td>
<td>When it is time to get up in the morning, I most often get right out of bed.</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>5.</td>
<td>A letter may sit for days after I write it before mailing it.</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>6.</td>
<td>I generally return phone calls promptly.</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>7.</td>
<td>Even with jobs that require little else except sitting down and doing them, I find they seldom get done for days.</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>8.</td>
<td>I usually make decisions as soon as possible.</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>9.</td>
<td>I generally delay before starting on work I have to do.</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>10.</td>
<td>I usually have to rush to complete a task on time.</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>11.</td>
<td>When preparing to go out, I am seldom caught having to do something at the last minute.</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>In preparing for some deadline, I often waste time by doing other things.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>12.</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>I prefer to leave early for an appointment.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13.</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>I usually start an assignment shortly after it is assigned.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14.</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>I often have a task finished sooner than necessary.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15.</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>I always seem to end up shopping for birthday or Christmas gifts at the last minute.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16.</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>I usually buy even an essential item at the last minute.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17.</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>I usually accomplish all the things I plan to do in a day.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18.</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>I am continually saying I’ll do it tomorrow.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19.</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>I usually take care of all the tasks I have to do before I settle down and relax for the evening.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20.</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
Procrastination Assessment Scale – Students

Instructions: For each of the following activities, please rate the degree to which you delay or procrastinate. Rate each item on a 1-5 scale according to how often you wait until the last minute to do the activity. Then, indicate on a 1-5 scale the degree to which you feel procrastination on that task is a problem. Finally, indicate on a 1-5 scale the degree to which you would like to decrease your tendency to procrastinate on each task.

I. Writing a Term Paper

1. To what degree do you procrastinate on this task?

<table>
<thead>
<tr>
<th>Never Procrastinate</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

2. To what degree is procrastination on this task a problem for you?

<table>
<thead>
<tr>
<th>Not at all a problem</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

3. To what extent do you want to decrease your tendency to procrastinate on this task?

<table>
<thead>
<tr>
<th>Do not want to decrease</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

II. Studying for Exams

1. To what degree do you procrastinate on this task?

<table>
<thead>
<tr>
<th>Never Procrastinate</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

2. To what degree is procrastination on this task a problem for you?

<table>
<thead>
<tr>
<th>Not at all a problem</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
3. To what extent do you want to decrease your tendency to procrastinate on this task?

<table>
<thead>
<tr>
<th>Do not want to decrease</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>Definitely want to decrease</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

### III. Keeping up with Weekly Reading Assignments

1. To what degree do you procrastinate on this task?

<table>
<thead>
<tr>
<th>Never Procrastinate</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>Always Procrastinate</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

2. To what degree is procrastination on this task a problem for you?

<table>
<thead>
<tr>
<th>Not at all a problem</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>Always a problem</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

3. To what extent do you want to decrease your tendency to procrastinate on this task?

<table>
<thead>
<tr>
<th>Do not want to decrease</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>Definitely want to decrease</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

### IV. Academic Administrative Tasks: Filling Out Forms, Registering for Classes, Getting ID Card, etc.

1. To what degree do you procrastinate on this task?

<table>
<thead>
<tr>
<th>Never Procrastinate</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>Always Procrastinate</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

2. To what degree is procrastination on this task a problem for you?

<table>
<thead>
<tr>
<th>Not at all a problem</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>Always a problem</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
3. To what extent do you want to decrease your tendency to procrastinate on this task?

<table>
<thead>
<tr>
<th>Do not want to decrease</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>Definitely want to decrease</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

V. Attendance Tasks: Meeting with Your Advisor, Making an Appointment with a Professor, etc.

1. To what degree do you procrastinate on this task?

<table>
<thead>
<tr>
<th>Never Procrastinate</th>
<th>1</th>
<th>Almost Never</th>
<th>2</th>
<th>Sometimes</th>
<th>3</th>
<th>Nearly Always</th>
<th>4</th>
<th>Always Procrastinate</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

2. To what degree is procrastination on this task a problem for you?

<table>
<thead>
<tr>
<th>Not at all a problem</th>
<th>1</th>
<th>Almost never</th>
<th>2</th>
<th>Sometimes</th>
<th>3</th>
<th>Nearly Always</th>
<th>4</th>
<th>Always a problem</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

3. To what extent do you want to decrease your tendency to procrastinate on this task?

<table>
<thead>
<tr>
<th>Do not want to decrease</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>Definitely want to decrease</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

VI. School Activities in General

1. To what degree do you procrastinate on this task?

<table>
<thead>
<tr>
<th>Never Procrastinate</th>
<th>1</th>
<th>Almost Never</th>
<th>2</th>
<th>Sometimes</th>
<th>3</th>
<th>Nearly Always</th>
<th>4</th>
<th>Always Procrastinate</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

2. To what degree is procrastination on this task a problem for you?

<table>
<thead>
<tr>
<th>Not at all a problem</th>
<th>1</th>
<th>Almost never</th>
<th>2</th>
<th>Sometimes</th>
<th>3</th>
<th>Nearly Always</th>
<th>4</th>
<th>Always a problem</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td>0</td>
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<td>0</td>
<td>0</td>
<td>0</td>
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<td></td>
</tr>
</tbody>
</table>

3. To what extent do you want to decrease your tendency to procrastinate on this task?

<table>
<thead>
<tr>
<th>Do not want to decrease</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>Definitely want to decrease</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
### Reasons for Procrastination

Instructions: Think of the last time the following situation occurred. It’s near the end of the semester. The term paper you were assigned at the beginning of the semester is due very soon. You have not begun work on this paper. There are reasons why you have been procrastinating on this task. Rate each of the following reasons on a 5-point scale according to how much it reflects why you procrastinated at the time. Mark your answers by writing the numbers 1-5 in the space to the left of each statement.

<table>
<thead>
<tr>
<th>Reason</th>
<th>Not at all reflects why I procrastinate</th>
<th>Somewhat reflects why I procrastinate</th>
<th>Definitely reflects why I procrastinate</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. You were concerned the professor wouldn’t like your work.</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>B. You had a hard time knowing what to include and what not to include in your paper.</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>C. You waited until a classmate did his/hers, so that he/she could give you some advice.</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>D. You had too many other things to do.</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>E. There’s some information you needed to ask the professor, but you felt uncomfortable approaching him/her.</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>F. You were worried you would get a bad grade.</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>G. You resented having to do things assigned by others.</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>H. You didn’t think you knew enough to write the paper.</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>I. You really disliked writing term papers.</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>J. You felt overwhelmed by the task.</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>K. You had difficulty requesting information from other people.</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
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<td></td>
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<tr>
<td>---</td>
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<td>---</td>
<td>---</td>
</tr>
<tr>
<td>L.</td>
<td>You looked, forward to the excitement of doing this task at the last minute.</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>M.</td>
<td>You couldn’t choose among all the topics.</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>N.</td>
<td>You were concerned that if you did well, your classmates would resent you.</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>O.</td>
<td>You didn’t trust yourself to do a good job.</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>P.</td>
<td>You didn’t have enough energy to begin the task.</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Q.</td>
<td>You felt it just takes too long to write a term paper.</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>R.</td>
<td>You liked the challenge of waiting until the deadline.</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>S.</td>
<td>You knew that your classmates hadn’t started the paper either.</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>T.</td>
<td>You resented people setting deadlines for you.</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>U.</td>
<td>You were concerned you wouldn’t meet your own expectations.</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>V.</td>
<td>You were concerned that if you got a good grade, people would have higher expectations of you in the future.</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>W.</td>
<td>You waited to see if the professor would give you some more information about the paper.</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>X.</td>
<td>You set very high standards for yourself and you worried that you wouldn’t be able to meet those standards.</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>You just felt too lazy to write a term paper.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>--------------------------------------------</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Y</td>
<td>0</td>
<td>0</td>
<td>0</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Your friends were pressuring you to do other things.</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Z</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
**Differential Emotions Scale**  
Please circle the point on the scales that best describes the way you feel at this moment.

<table>
<thead>
<tr>
<th>情感</th>
<th>No At All</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>Very Strongly</th>
</tr>
</thead>
<tbody>
<tr>
<td>Merry/Gleeful/Amused</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Warmhearted/joyful/Elated</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Sad/Downhearted/Blue</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Irritated/Angry/Mad</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Fearful/Scared/Afraid</td>
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<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Tense/Anxious/Nervous</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
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<td>0</td>
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</tr>
<tr>
<td>Disgusted/Turned-Off/Repulsed</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
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<tr>
<td>Contemptuous/Scornful/Disdainful</td>
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<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
Analogy Practice Materials


Working Analogy Questions
When reading the analogy questions you can interpret the colons like this: (:) translates to "is to" and (::) translates to "as". Let's try one. The capitalized words are the stem words.

**SKYSCRAPER: SHACK::**
(A) elevator: escalator
(B) house: building
(C) village: town
(D) jetliner: biplane
(E) chimney: fireplace

Comparing the Stem Words
The stem words are skyscraper and shack. What's the relationship between skyscraper and shack? A skyscraper is a large, modern structure. A shack is a small structure. So the relationship is: The first word is a large, modern version of the second word.

Choosing an Answer
Once you know how the stem words are related, your next job is to find the one answer choice that best matches this relationship. Let's try the answer choices one at a time.

(A) Is the first word, elevator, a large, modern version of the second word, escalator? Obviously not. So knock this choice out.

(B) Is a house a large, modern version of a building? Not at all. So cross out this choice.

(C) Is a village a large, modern version of a town? Of course not. So eliminate this choice.

(D) Is a jetliner a large, modern version of a biplane? Yes. A jetliner is a large, modern aircraft. A biplane is one of those small double-wing planes with two seats. So the relationship in this choice matches the relationship of the stem words. Looks like you have a winner. Mark it, but let's look at the remaining choice, just in case.

(E) Is a chimney a large, modern version of a fireplace? Well, a chimney is a part of a fireplace, not a modern version of it. Even though this choice has something to do with buildings, its relationship doesn't match, so knock it out.

So, you would go with choice D as your answer.
Finding the Answer
Did you notice something? The stem words are about buildings, but the correct answer has nothing to do with buildings.
You're looking for same relationships, not same categories. The first word was a modern and big version of the second word.

Defining the Relationship
Sometimes it's easier to define the relationship between the stem words if you start with the second word in the pair instead of the first one. Let's look at another analogy question to see how this strategy works.

**SPORT: SOCCER::**
- **A** fish: river
- **B** volleyball: net
- **C** field: fun
- **D** stadium: game
- **E** literature: sonnet

Stem Word Order
Here it's easier to say, "Soccer is a kind of sport." The second word is a specific type of the first word. Can you find the choice where the second word is a specific type of the first word?
The correct answer is choice (E): A sonnet is a type of literature.
*Remember:* The correct answer pair must relate in the same order that the stem words relate.

Nouns or Verbs?
Sometimes you need to know whether the stem words are nouns or verbs in order to determine their meaning and figure out how they are related. For example, suppose you have this question.

**SPRING: RAIN::**
- **A** suitor: gifts
- **B** pollen: bee
- **C** farm: tractor
- **D** automobile: traffic
- **E** requirement: limitation

Scan the Answer Choices
The stem words are puzzling. Is spring the action-verb meaning jump or bounce? Or is spring a thing, the noun that means the season? Or the noun that means the coiled piece of metal that you find in mattresses and watches? One way to find out is to look at the answer choices. Are the first words in the answer choices verbs or nouns?
**SPRING: RAIN::**
(A) suitor: gifts 
(B) pollen: bee 
(C) farm: tractor 
(D) automobile: traffic 
(E) requirement: limitation 

Spring Is a Noun
*Farm* can be either a verb or a noun, but the other first words are nouns. So from that you know that all the first words are nouns, including *spring* and *farm*. We don't know what the second words are yet. But now that you know the stem word *spring* is a noun — not the verb that means to jump — can you find the answer to this question?

Try Different Meanings
Choice (A) is the right answer. Spring, the season, brings rain, in the same way that a suitor brings gifts.

Questions like that one can be tricky if a word has more than one meaning. If you try one meaning and have no luck, then try another meaning and see if that one works. But once you know a word is, say, a noun, try only different noun meanings, not meanings of verbs or adjectives.

Common Relationships
These next sections describe the eleven most common analogy relationships.

Type 1: Type Of
SOCCRER: SPORT:: You saw one like this before, remember? *Soccer* is a type of sport.

Here's another example: JAYWALK: MISDEMEANOR:: *Jaywalk* is a type of misdemeanor, or minor crime.

Type 2: Definition
PROCRASTINATOR: DELAY:: A *procrastinator* is someone who delays. Or you could say, *delay* is what a procrastinator does. Whatever order you use for the stem words is the order you must use for each of the choices.
Type 3: Opposites
STARVATION: BINGEING:: Starvation is the opposite of bingeing.

Type 4: Lack Of
PAUPER: MONEY:: A pauper lacks money. The first word lacks the second word.

Type 5: Same
PERSUASIVE: CONVINCING:: Someone who is persuasive is also convincing; the two words are synonyms.

Type 6: Extremes
HOT: SCALDING:: The second word is the extreme of the first word.

Type 7: Part to Whole
PLATOON: SOLDIER:: The second word is part of the first word.

Type 8: Use
GILLS: BREATHING:: Gills are used for breathing. The first word is used for the purpose of the second word.

Type 9: Place
DESERT: OASIS:: The second word is located in the first word.

Type 10: Sign Of
SNARL: ANGER:: The first word is a sign of the second word.

Type 11: Job-Related Pairs
SURGERY: INCISION:: An incision is performed in surgery. The second word is something that is done during the first word.

SCALPEL: SURGERY:: A scalpel — which is a doctor's cutting tool — is used in surgery. The first word is a tool used for doing the second word.

CONSTRUCTION: CARPENTER:: The second word is someone who performs the first word.
Analogy Practice Questions

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1. COLD : FRIGID ::
   A. hot : warm
   B. proper : prudish
   C. dark : light
   D. colorful : pale
   E. modest : bold

2. BREAKFAST : DINNER ::
   A. lark : nightingale
   B. stone : wood
   C. tent : tepee
   D. radar : sonar
   E. realism : rationalism

3. WAX : CANDLE ::
   A. string : kite
   B. ink : pen
   C. liquid : cup
   D. paper : pulp
   E. clay : pot

4. STUDENT : DORMITORY ::
   A. curtain : stage
   B. prisoner : jail
   C. alphabet : letter
   D. shirt : clothing
   E. skull : brain

5. BANANA : PEEL ::
   A. ventricle : heart
   B. door : knob
   C. bark : tree
   D. orange : rind
   E. section : orange

6. PODIUM : PLATFORM ::
   A. pulpit : pew
   B. stadium : grandstand
   C. utterance : euphemism
   D. critique : oration
   E. evangelism : ecclesiast

7. PLAGIARIST : APPROPRIATE ::
   A. counterinsurgent : militarize
   B. sentinel : watch
   C. journalist : report
   D. thief : loot
   E. felon : convict

8. OSSIFY : BONE ::
   A. chew : pulp
   B. intenerate : cud
   C. fossilize : stone
   D. cake : flour
   E. whisper : murmur

9. WATER : CISTERN ::
   A. bolt : fabric
   B. fodder : silo
   C. garland : flower
   D. spell : incantation
   E. prayer : religion

10. UNTRACTABLE : MALLEABLE ::
    A. exorbitant : wasteful
    B. gregarious : sociable
    C. immutable : changeable
    D. palpable : surreal
    E. culinary : olfactory
Analogy Practice Questions Continued

11. OIL PAINTING : CANVAS ::
   - etching : acid
   - violin : bow
   - fresco : plaster
   - building : architecture
   - watercolor : brush

12. SPIDER : OCTOPUS ::
   - gibbon : salmon
   - locust : water beetle
   - coyote : dolphin
   - cheetah : lobster
   - oriole : groundhog

13. WAIT : LURK ::
   - prowl : slink
   - expect : anticipate
   - service : repair
   - move : skulk
   - trot : canter

14. THWART : ABET ::
   - unity : knit
   - strip : befit
   - lacerate : incise
   - savor : enjoy
   - murmur : caterwaul

15. CUPOLA : ROOF ::
   - branch : tree
   - building : story
   - bishop : sceptre
   - airplane : propeller
   - statue : pedestal

16. BRITTLE : BREAK ::
   - fertile : crush
   - flexible : bend
   - ductile : divide
   - pliable : compress
   - futile : separate

17. BOTANIST : PETUNIA ::
   - biologist : energy
   - physicist : matter
   - zoologist : periwinkle
   - numismatist : coin
   - geologist : gypsum

18. FELDSPAR : MINERAL
   - cumulonimbus : cloud
   - chemical : crystal
   - geognosy : rock
   - magma : lava
   - road : tar

19. CALF : VEAL ::
   - joey : kangaroo
   - deer : venison
   - cub : fox
   - muscle : horn
   - sheep : ram

20. EMPLOYEE : WAGES ::
   - worker : jobs
   - entrepreneur : profits
   - negotiator : conflicts
   - composer : symphony
   - scholar : book
Analogy Test 1

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1. TROUPE : PLAYER ::
A. team : coach
B. singer : conductor
C. club : member
D. puppy : litter
E. flower : bulb

2. GROWL : HOSTILITY ::
A. smell : nose
B. squeak : sound
C. whinny : horse
D. sigh : relief
E. fear : bravery

3. CAPTURE : TRAP ::
A. shoot : bulls-eye
B. staple : paper clip
C. hide : fence
D. grind : mill
E. ride : bicycle

4. CHILD : HUMAN ::
A. bird : robin
B. dog : pet
C. snake : slither
D. kitten : cat
E. cow : milk

5. TOOTH : ORTHODONTIST ::
A. surgeon : doctor
B. cardiologist : heart
C. tree : arborist
D. gardener : plant
E. petal : botanist

6. CHECKERS : CHESS ::
A. tennis : soccer
B. field hockey : ice hockey
C. basketball : gymnastics
D. hearts : bridge
E. square : diamond

7. PLAN : SCHEME ::
A. antiquity : age
B. annoyance : evasion
C. statesman : politician
D. assignment : task
E. prison : jail

8. ESSAY : SHORT STORY ::
A. symphony : concerto
B. biography : novel
C. acrylic : watercolor
D. comedy : burlesque
E. monologue : drama

9. INCANDESCENT : GLOW ::
A. iridescent : disappear
B. amorphous : heat
C. evanescent : fade
D. stagnant : move
E. ephemeral : persist

10. EFFUSIVE : DEMONSTRATIVE
A. effective : defective
B. theoretical : experimental
C. gushing : throttled
D. downcast : dejected
E. pouring : choked
Analogy Test 2


Syvum. GRE Test Preparation Practice Exercises. Retrieved August 1st, 2010 from:
http://www.syvum.com/gre/#s3

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1. RIVER: SILT:
   A. glacier: detritus
   B. steam: salt
   C. volcano: magma
   D. geyser: stream
   E. rain: acid

2. ELEPHANT: HERBIVOROUS
   A. vegetarian: omnivorous
   B. quadruped: proboscis
   C. snail: mollusc
   D. dog: canine
   E. tiger: carnivorous

3. PARASITE : MISTLETOE : :
   A. marsupial: kangaroo
   B. fungus: marigold
   C. aerie: eagle
   D. saprophyte: mallard
   E. scavenger: carrion

4. BURROW : RABBIT
   A. shell: snail
   B. nest: thrush
   C. shed: cow
   D. cage: bird
   E. desert: camel

5. POUND : WEIGHT :
   A. scale: mass
   B. light year: distance
   C. money: load
   D. ounce: time
   E. crush: shape

6. SANGUINE : CHEERFUL ::
   A. destitute: poor
   B. confident: presumptuous
   C. obscure: clear
   D. brilliant: valedictory
   E. pallid: ebullient

7. PLOTTER : CABAL ::
   A. crew: gathering
   B. advisor: cabinet
   C. conductor: orchestra
   D. choir: tenor
   E. senate: representative

8. WISE : SAGE ::
   A. craven: knight
   B. erudite: leader
   C. judicious: mediator
   D. propitious: mendicant
   E. sensual: voluptuary

9. BOAT : WAKE ::
   A. path: trail
   B. thought: rumination
   C. inspiration: muse
   D. foot: track
   E. railroad: train

10. DIRGE : MOURNING ::
    A. affliction: adversity
    B. mirth: entertainment
    C. laughter: merriment
    D. lamentation: funeral
    E. baffle: sound
Pre-Test Questions

1. What is the lowest mark on the test that you would be satisfied receiving?  ____

2. Please indicate the mark that you believe you will actually receive  ____

Post Test Questions

3. How satisfied are you with your performance on this test?

   1) Extremely satisfied
   2) Moderately satisfied
   3) Slightly satisfied
   4) Neither satisfied or dissatisfied
   5) Slightly dissatisfied
   6) Moderately dissatisfied
   7) Extremely dissatisfied

4. How do you think you did on this test compared to other students completing this experiment?

   1) Far better
   2) Moderately better
   3) Slightly better
   4) The same
   5) Slightly worse
   6) Moderately worse
   7) Far worse

5. How do you feel about your preparation for this test?

   1) I studied more than I should have
   2) I studied as much as I should have
   3) I studied less than I should have
Appendix B:

Correlations, Means, and Standard Deviations for the Perfectionism Subscales in Study 1

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
</tr>
</thead>
<tbody>
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<td>1. Personal Standards</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Organization</td>
<td>-.19*</td>
<td></td>
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</tr>
<tr>
<td>3. Parental Expectations</td>
<td>.26**</td>
<td>.03</td>
<td></td>
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</tr>
<tr>
<td>4. Parental Criticism</td>
<td>.10</td>
<td>.02</td>
<td>.59**</td>
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<td></td>
<td></td>
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</tr>
<tr>
<td>5. Doubts about Actions</td>
<td>.31**</td>
<td>.14</td>
<td>.16*</td>
<td>.43**</td>
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*Note. *p < .05. **p < .01.
### Factor Loadings for the Perfectionism Subscales in Study 1

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Appendix D

Study 2 Experimental Materials
LETTER OF INFORMATION & CONSENT TO ACT AS A HUMAN RESEARCH
SUBJECT: ANALOGY 2

Kristen Blackler, B.A., and Jill A. Jacobson, Ph.D.
Department of Psychology, Queen’s University

NAME OF PARTICIPANT (please print): ____________________________________

PURPOSE OF THE STUDY: I have been asked to participate in a research project designed to
investigate the relationship between various personality factors and verbal reasoning ability.

PROCEDURE: If I agree to participate, the following will occur: I complete a verbal reasoning test along
with various personality measures. Participation will take approximately 1 hour, and I will receive 1.0
credit for my participation.

RISKS: No risks are anticipated; however, some questions may seem personal in nature or may make me
feel uncomfortable. If there is something that makes me uncomfortable, I understand that I have the right
to refuse to answer any questions or withdraw from the study by letting the experimenter know I do not
wish to continue, at any time and without penalty. I also understand that the questionnaires included in this
study are for research purposes only. They are not meant to diagnose a psychological disorder or be in any
way meant to determine whether or not I need psychological treatment. If answering any of the questions
in this study has raised concerns for me, and/or if I would like to speak to a psychologist about a
psychological or emotional issue, I understand that I may contact Health, Counseling, and Disability
Services at 613-533-2506.

BENEFITS: I will receive 1.0 credit for my Psychology 100 course through the Queen’s University
Psychology subject pool for participation. I will also have the opportunity to learn more about social-
personality psychology and research in general.

CONFIDENTIALITY: I understand that any information that I provide will remain entirely confidential
and will be stored in a locked cabinet in a secured building. I hereby authorize the use of all records and
personal data derived from this experiment for research purposes. I understand that any information derived
from this research project that personally identifies me will not be voluntarily released or disclosed by the
researchers without my separate consent, except as specifically required by law.

IF I HAVE QUESTIONS: Any questions about study participation may be directed to Dr. Jill Jacobson at
613-533-2847. Any ethical concerns about the study may be directed to the Chair of the General Research
Ethics Board at 613-533-6081 or Chair.GREB@queensu.ca.

VOLUNTARY PARTICIPATION: By signing below, I indicate that I have read this Letter of
Information and Consent Form and understand the nature of this study. In addition, the experimenter has
answered my questions satisfactorily. I know that I may refuse to answer any questions or discontinue my
involvement at any time without penalty. My signature below indicates that I have read the information in
this form and consent to participate in this study voluntarily.

____________________________________________ ________________________
SIGNATURE OF PARTICIPANT     DATE

This study has been granted clearance according to the recommended principles of Canadian ethics
guidelines and Queen’s policies.
The purpose of the experiment is not only for us to collect data, but also for you to learn what psychology research is like. It gives you a chance to see how experiments really work and an opportunity to learn how we test hypotheses.

We gave you only a brief idea at the beginning of the study of what the experiment's purpose. Sometimes when we are studying how people think about various issues (as in this experiment), we don't give people a full description of what we are studying. That way we are able to get natural responses. Not every psychology study does this. However, there are a few things about this experiment that we would like to explain.

In this study, you were given two opportunities to study for and complete a verbal analogy test. The test you received was made up of practice questions from the SAT Reasoning Test and the Graduate Record Exam. We were interested in how perfectionism, mood, and satisfaction with test performance interact to predict preparation for a subsequent test. We also were interested in how the positivity or negativity of the feedback that you received would influence your performance. You were assigned to receive false feedback; that is, the feedback that you received was randomly determined and not linked to your actual responses. So you should not take the feedback that you received as a true reflection of your performance on the analogy tests.

The computer kept track of the time you spent studying as well as playing the video game (our behavioural measure of procrastination). We hypothesized that higher levels of perfectionism would initially be associated with more time studying. However, we believed that if highly perfectionistic students were dissatisfied with their performance on the first test, they would procrastinate more and not perform as well on the second test.

We would appreciate it if you would not reveal the purpose and hypotheses of this study to others as this may bias their responses if they participate in this study.

The questionnaires included in this study were for research purposes only. They were not meant to diagnose a psychological disorder or be in any way meant to determine whether or not you needed psychological treatment. If answering any of the questions in this study raised concerns for you and/or if you would like to speak to a psychologist about a psychological or emotional issue, please contact Health, Counseling, and Disability Services at 613-533-2506. In addition, we have a treatment referral list available for your convenience. Please ask the experimenter, and we will provide you with this list.

Any questions about study participation may be directed to Dr. Jill Jacobson at 613-533-2847. Any ethical concerns about the study may be directed to the Chair of the General Research Ethics Board at 613-533-6081 or Chair.GREB@queensu.ca.

If you are interested in this area of research, you may wish to read the following reference:


Thank you for participating! Your assistance with this research is greatly appreciated.

Kristen Blackler     Jill A. Jacobson
M.Sc. Candidate     Associate Professor
Script for Prime Task Instructions

Part 1

Hi, my name is Dave Kendall, and I’m working on my doctoral dissertation. I’d like to thank you for agreeing to help me out in pre-testing these materials for later experiments. These experiments will be concerned with the way that people make lexical decisions and the ease with which different types of sentence constructions are formed and recognized. Certain types of sentence constructions are easier to form and more likely to be used because they have a better fit with the way we think naturally, especially when we are trying to express important thoughts about ourselves. For this exercise, please open the folder that was placed on your desk. You will see 18 sets of scrambled words. For each set, a grammatical sentence can be formed using either four or five of the words. For each set, please write your sentence on the line and cross out the one word you do not use. An example is shown at the top of the first page.

You should turn OFF the tape recorder while you work on this task. Please remember to turn the tape recorder back on when you have finished with the sentences, so that I can give you the next set of instructions.

----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

Part 2

You are now finished with my study. Thanks for your help! I really appreciate it. Please take the folder to the experimenter in the other room, so that she can continue with her study. Also, please turn off the tape recorder before you leave, and thanks again!
Neutral Prime

Gender: Female    Male    Age: ______    Date: ______

Instructions: For each set of scrambled words, **FOUR OR FIVE** of the words can be unscrambled to form a grammatical sentence. Please write a meaningful sentence that can be formed by the words and cross out a word if you do not use it.

EXAMPLE: drove photograph he boat the

He drove the boat.

1) perennials every bloom much year

2) pasta I floor ordered the

3) warm the be water was

4) to store the help I walked

5) car the highway ditch the took

6) the ate blue was ball

7) downtown ticket movie is the theatre

8) lion the tail a fall has
9) was window cat the opened

10) the reviews quick has bad musical

11) under in Toronto is Ontario

12) very outside think is it cold

13) is know Europe in France

14) the hauled hunger mules supplies

15) I book a tree climbed

16) answered I the star telephone

17) warm the I water was

18) really can glass time diamonds cut

When you are finished, please start the tape recorder again.
Positive Mood Prime

Gender: Female  Male  Age: ______  Date: ______

Instructions: For each set of scrambled words, **FOUR OR FIVE** of the words can be unscrambled to form a grammatical sentence. Please write a meaningful sentence that can be formed by the words and cross out a word if you do not use it.

EXAMPLE: drove photograph he boat the

He drove the boat.

=================================================================================================

1)  can nothing depress very me

2)  bright want my is future

3)  parents me brag my so about

4)  to store the help I walked

5)  time people most me like

6)  blast a think is life

7)  downtown ticket movie is the theatre

8)  any get better like doesn’t it

=================================================================================================
9) I happy all it have

10) do many it can I

11) turn hope fine things will out

12) out bum far nothing me can

13) I happen make things lot

14) the hauled huger mules supplies

15) alive to mind great be it’s

16) cool I’m relax just too

17) it every right I make can

18) really can glass time diamonds cut

When you are finished, please start the tape recorder again.
Optimism Prime

Gender: Female    Male    Age: ______    Date: ______

Instructions: For each set of scrambled words, **FOUR OR FIVE** of the words can be unscrambled to form a grammatical sentence. Please write a meaningful sentence that can be formed by the words and cross out a word if you do not use it.

EXAMPLE: drove photograph he boat the

He drove the boat.

1) confidence am window gaining I

2) we definitely stay time together will

3) I stood extra anticipate money

4) to store the help I walked

5) becoming am ornate relaxed I

6) sale spring orders increasing are my

7) downtown ticket movie is the theatre

8) will I candid early finish
9) win ended team our will

10) will help vacation a take I

11) good my are tree brakes

12) I raise a get quiet will

13) faucet brook my working is

14) the hauled hunger mules supplies

15) invited be duster will I

16) reliable is jacket car new my

17) will respected book I be

18) really can glass time diamonds cut

When you are finished, please start the tape recorder again.
Appendix E:

Correlation, Means, and Standard Deviations for the Perfectionism Subscales

in Study 2

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Mean          24.60  22.22  15.63  8.75  11.76  23.41  71.90  55.20  58.80

Standard Deviation 4.12   5.46   4.39   3.41   3.43   7.27   13.94  13.22  9.03

Note. *p < .05. **p < .01.
Appendix F

Factor Loadings for the Perfectionism Subscales in Study 2

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