THE EFFECTS OF PERFECTIONISM ON DECISIONAL DELAY UNDER CONDITIONS OF PERCEIVED RISK

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ABSTRACT

The present study sought to explore and expand the knowledge regarding the fairly novel body of literature looking at perfectionism and the decision-making process called decisional delay. More specifically, this study begins to examine the potential influence of perfectionism on indicators of decisional delay, selection difficulty, and stress reactivity involved in decision-making processes. This study examined the predictive relationships between perfectionism, decisional delay, selection difficulty and stress reactivity in a sample of undergraduate students (N = 90) following random assignment to one of two (low, high) risk conditions on a reward selection decision-making task. Overall, analyses showed that dimensions of perfectionism carried mixed predictive abilities for selection difficulty and stress reactivity on a decision-making task. Patterns of results indicated that those higher in dimensions that encompass critical self-evaluations, concerns with error, and threat of failure, were predictive of increases in difficulties deciding and heightened stress. Moreover, results showed that the perfectionism dimension characterized by personal standards, which arguably contains adaptive capacities, was not predictive of selection difficulty and stress reactivity. Finally, findings demonstrated that perfectionism was not predictive of the reaction time decisional delay indicator. The results are discussed in terms of practical implications, as well as future directions.

Keywords: perfectionism, decision-making, decisional delay, stress reactivity, selection difficulty

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF APPENDICES

The Effects of Perfectionism on Decisional Delay under Conditions of Perceived Risk

Performance and decisional tasks are common components of university, employment and day-to-day responsibilities, however, within these contexts some individuals will adjust better than others. More specifically, previous research has suggested that individual variables (Bruin, Parker, & Fischoff, 2007), contextual variables (Constantine, Wallace, & Kindaichi, 2005), cognitive biases (Stanovich & West, 2008), and past experience (Juliusson, Karlsson, & Garling, 2005) influence the process of decision-making. For example, research has found that anxiety produces effects on decision-making, leading to more risk-averse behaviours in anxious individuals than non-anxious individuals (Maner & Gerend, 2007). In addition, research has suggested that an increased attentional bias toward threat that accompanies anxiety can also play a role in decision-making processes (Maner & Gerend, 2007). In terms of individual difference variables implicated in decision-making, personality traits such as perfectionism have been shown to influence reactions, coping responses to stressors, and delays in decision-making (Chang, 2012; Stoeber & Rennert, 2008; Wei, Heppner, Russell, & Young, 2006).

Given such findings, there is a basis for more specifically investigating how individual difference variables affect decisional processes because of the costs that can be associated with delaying decisions. For instance, research has demonstrated that individuals who are considered indecisive delayed making a selection on a decision-making task, even when faced with the risk of losing the most favorable option available (Patalano & Wengrovitz, 2007). Such findings lend support to the differential influence of individual difference variables on decision-making and support the need for ongoing interest in research that focuses on trying to better understand the mechanisms that influence decision-making processes. Benefits of understanding these factors and the relevant mechanisms involved in the decision-making process may also provide insight

as to how they influence outcomes, including what decisions are being made as well as when these decisions are being made.

Whereas previous work has examined the role of personality traits such as indecisiveness on decisional delay (Patalano & Wengrovitz, 2007), as well as the effects of anxiety on decision-making (Maner & Gerend, 2007), few studies have specifically considered how a tendency to strive for ideal or perfect outcomes that is evidenced by those higher in perfectionism might affect the way in which decisional processes occur under conditions of perceived risk. As studies have suggested, an emphasis on success and achievement can weigh down on individuals high in perfectionism, which can result in increased stress and the development and maintenance of psychopathology, including anxiety disorders (Frost & DiBartolo, 2002; Shafran & Mansell, 2001), eating disorders (Bardone-Cone, Wonderlich, Frost, Bulik, Mitchell, Uppala, & Simonich, 2007; Jacobi, Hayward, de Zwaan, Kraemer, & Agras, 2004; Lilenfeld, Wonderlich, Riso, Crosby, & Mitchell, 2006; Stice, 2002), and a variety of other negative consequences, such as job burn-out (Stoeber & Rennert, 2008).

This study aims to investigate how perfectionism will influence decision-making processes under conditions of perceived risk on an ambiguous decision-making task. In order to gain insight into these relationships, the current study uses a decision-making task, involving the selection of a reward item from a variety of options for having participated in the study, with the possibility that items may change or no longer be available as more time and more options are presented. As perfectionism appears to be common among student populations (Rice & Ashby, 2007) and has been positively associated with a variety of negative health outcomes (Bardone-Cone et al., 2007; Egan, Wade, & Shafran, 2011; Shafran & Mansell, 2001; Stoeber & Rennert,

2008), it would be beneficial to better understand its influences on decision-making processes and performance outcomes.

This study seeks to provide valuable insight outlining perfectionism-related differences in decision-making tendencies. That is, understanding the mechanisms through which perfectionism might play a role in decision-making processes involving perceived risk carries implications to help reduce anxiety and avoidance tendencies often seen in individuals high in perfectionism when completing performance or decisional tasks at school, at work or in other areas of life (Stöber & Joormann, 2001). In order to understand how perfectionism ties into this decision-making piece, a review of previous literature on decisional delay, perfectionism and the influence of the connections between perfectionistic tendencies and related constructs including cognitive bias, emotional influences, and avoidance of risk in decision-making, is presented.

Decisional Delay

In order to understand the underlying process of how individuals who differ in perfectionistic tendencies might adapt to dealing with decision-making situations involving risk, it is essential to review constructs relevant to decision-making and perfectionism. On a regular basis, individuals come across a variety of daily decisions in all aspects of life and are required to make decisions in order to keep things dynamic and progressing (Milgram & Tenne, 2000). As decisions, ranging from minor to major matters, are frequently required, it is helpful to make decisions in a prompt manner (Milgram & Tenne, 2000). It has been suggested that the act of not making decisions adds clutter in life and can produce stress reactions characterized by feelings of undesirable control over one’s life (DeLongis, Coyne, Dakof, Folkman, & Lazarus, 1982; Tice & Baumeister, 1997). This sense of feeling hassled or tied down has also been shown to have undesirable consequences on one’s physical and mental health (DeLongis et al., 1982; Tice &

Baumeister, 1997), as exemplified for example by procrastinators reporting greater stress and more illness than non-procrastinators, as well as compromised quality of work and lower grades on assignments (Tice & Baumeister, 1997).

Why then would some individuals delay making decisions? Research findings suggest that there are a few scenarios where, if there is no time pressure, delaying decisions might be sensible. These include being provided with insufficient information to make an informed decision, when the issue is cognitively complex and there is a inability to handle the complexity or more time is needed to consider the complex issue, when there are other pressing matters with higher priorities that demand attention, and when the consequences of the decision are so heavy that more consideration is warranted (Janis & Mann, 1977). Importantly, decision-making is not limited to these circumstances and occurs beyond the aforementioned examples; suggesting that sometimes individuals delay decision-making in situations where it is not ideal to do so or when they have a harder time adapting, which can be disadvantageous. Of particular interest to this study is the idea of putting off a decision or having trouble making a decision, which is a phenomenon termed decisional delay.

When individuals experience selection difficulty and choose to delay making a decision, they can do so for a variety of reasons, including a lack of clarity of which option best meets goals, the anticipation of regret after making a decision, putting off a decision in hopes of escaping a decision altogether, the possibility of later being able to clearly discern a superior option and, lastly, to lower negative emotions such as anxiety (Anderson, 2003). Moreover, it has been suggested that decisional delay occurs because of difficulty in making a selection, known as selection difficulty. Selection difficulty has been classified as a type of decisional avoidance and research has suggested that selection difficulty might arise in situations when it is

not clear what to do or when no alternative meets the minimum standard set for making a decision (Anderson, 2003). In these situations, it has been suggested that one of the only options appears to be to delay making a selection (Anderson, 2003). In attempting to better understand why some individuals may be more susceptible than others to decisional delay, we considered the research that has suggested that decision-making, including decisional delay, can be influenced by a variety of factors, including personality characteristics (Patalano & Wengrovitz, 2007).

More generally, the research on personality predisposition to decisional delay has focused on traits that may impede or limit an individual's ability to make decisions with confidence and calmness. For example, in the current study, those with stronger perfectionistic tendencies may be at greater risk of experiencing tension and making decisions slower than those with lesser perfectionistic tendencies. Of importance is that individuals higher in perfectionism may tend to see matters from an all or nothing perspective and not having an ideal choice might mean they put off making a decision in order to avoid any anxiety or stress that accompanies making the wrong decision as well as the fear of failure that perfectionism encompasses (Egan, Piek, Dyck, Rees, & Hagger, 2013). Many of the reasons for which individuals may engage in decisional delay appear to share common foundations with perfectionistic tendencies. More specifically, research has demonstrated that individuals higher in perfectionism tend to delay decisions and take longer to make decisions, in addition to their tendency of setting a high threshold for alternative choices and striving to obtain alternatives without paying attention to the risks of delay (Frost & Marten, 1990).

Perfectionism Overview

As research has suggested, individual difference variables have been shown to play a role in decision-making (Patalano & Wengrovitz, 2007). Perfectionism, which has commonly been discussed in terms of achieving success, is not excluded from influencing achievement setbacks. In fact, self-oriented perfectionism has been shown to be negatively correlated with total publications as well as the decision to avoid risky research and to submit fewer publications for review for psychology professors (Sherry, Hewitt, Sherry, Flett, & Graham, 2010). With a focus on how cognitive and individual difference variables influence decision-making, the relationship between decisional delay and perfectionism is more closely examined in the current study.

Perfectionism is one personality trait that has been related to student performance and is common in post-secondary populations, among students and faculty members. Perfectionism tends to be defined by a set of key features that include setting excessively high standards, critical self-evaluations, perfectionistic strivings and concern over mistakes and others' evaluations (Blankstein & Dunkley, 2002; Chang, 2012; Frost, Marten, Lahart, & Rosenblate, 1990). Perfectionism is often described as a personality trait associated with both positive (adaptive) and negative (maladaptive) dimensions. Due to this combination, perfectionism tends to be reported as a multidimensional construct with purportedly adaptive qualities outlined as perfectionistic strivings characterized by self-oriented perfectionism and high personal standards, and maladaptive qualities outlined as perfectionistic concerns characterized by socially-prescribed perfectionism, critical self-evaluations, and concern over mistakes and others' evaluations (Bieling, Israeli, & Antony, 2004; Frost, Heimberg, Holt, Mattia, & Neubauer, 1993; Stoeber & Otto, 2006). For example, the personal standards subscale of the Frost Multidimensional Perfectionism Scale (FMPS) has been associated with less distress and the

concern over mistakes subscale associated with more distress (Egan et al., 2011; Rice, Bair, Castro, Cohen, & Hood, 2003). For the purposes of the current study, knowing that these tendencies have been associated with more distress lends support for exploring if, under conditions of risk, perfectionism may influence decisional delay as individuals higher in perfectionism may experience more distress and pressure in making a selection on the decision-making task.

In addition to these characteristics, individuals higher in socially-prescribed perfectionism tend to demonstrate a desire for perfection and a fear of imperfection and failure (Blankstein, Lumley, & Crawford, 2007). In line with these fears and insecurities, it has been suggested that those higher in neurotic perfectionism are often pushed towards goals rather than being pulled towards goals, in the sense that a fear of failure is the driving force of motivation (Hamachek, 1978). With such a strong concern over making mistakes, individuals higher in neurotic perfectionism seem to be more preoccupied with avoiding failure than with the need for achievement or success (Hamachek, 1978). Further support of key characteristics of perfectionism was demonstrated by research using a qualitative design that revealed key themes in individuals who are very high in perfectionism. These themes included aspects such as: self-critical reaction to failure, biases in thinking, avoidance, escape, safety behaviour, procrastination, and fear-driven behaviour (Riley & Shafran, 2005). Knowledge of these themes is informative specifically when considering how they may factor into a decision-making task involving risk. These perfectionistic tendencies surrounding concern over mistakes and fear of failure are essential components to consider regarding potential influences on deciding to delay making decisions in a decision-making task.

In a study that explored motivation to change perfectionistic tendencies, it was noted that individuals who scored high in negative perfectionism (the clinical group), as well as an athlete group (non clinical group), both reported positive benefits of perfectionism, specifically in helping achieve goals (Egan et al., 2013). Nonetheless, both groups also reported negative consequences of perfectionism, with the clinical group reporting significantly more. Specifically, the clinical group mentioned poor self-esteem and negative impact on others. These findings suggest that those who score relatively high in negative perfectionism tend to also experience more negative effects. Even after having reported more negative consequences, individuals in the clinical group did not report the desire to change their perfectionism, commenting that they believed it helped with achievements and provided a sense of direction (Egan et al., 2013). This lends support to a seemingly irrational importance ascribed to perfectionism in individuals with strong perfectionistic tendencies.

In addition, this study also revealed differences between the clinical and non-clinical groups in regards to concern over mistakes, whereby the clinical group ascribed failure to internal attributions and had much harsher negative self-evaluations about failure than did the non-clinical group. Further, compared to the non-clinical group, the individuals in the clinical group displayed more dichotomous (all-or-nothing) thinking which has been shown to be a key tendency in those higher in perfectionism (Egan et al., 2013). These findings lend support to the idea that individuals higher in perfectionism might be susceptible to experiencing more distress in similar situations than those lower in perfectionism in similar situations. The differences in the intensity associated with goals and standards, as well as the pressure of failure, offer helpful explanations as to possible avenues for why individuals higher in perfectionism may experience distress more strongly than others. It is possible that these perfectionistic tendencies of concern

over mistakes and fear of failure could influence the decision-making processes and result in substantial increases in negative affect and critical self-evaluations for those high in perfectionism.

This is especially relevant given the finding that perfectionism tends to be especially common among students, with research suggesting that approximately one fourth to one third of the college student population suffer from perfectionistic concerns (Rice & Ashby, 2007). Although perfectionism is often associated with success and high grade point averages, it appears there may be a cost to maintaining such perfection. Consequently, the desire and pressure to meet high standards has been related to increased worry, anxiety, procrastination, missed deadlines and less efficient time management (Stöber & Joormann, 2001); as evidenced for example by psychology professors submitting fewer publications for review or submitting to journals with lower impact ratings (Sherry et al., 2010). Understanding the negative consequences associated with perfectionism may provide insight as to which dimensions may influence the role of perfectionism in decisional delay under conditions of perceived risk.

Perfectionistic Thinking and Distress

In addition to perfectionistic tendencies and responses to stress, there are many studies that have shown a link between perfectionism and psychological distress (Bardone-Cone et al., 2007; Egan et al., 2011; Flett, Madorsky, Hewitt, & Heisel, 2002; Frost & DiBartolo, 2002; Jacobi et al., 2004; Lilenfeld et al., 2006; Shafran & Mansell, 2001; Steele, Corsini, & Wade, 2007; Stice, 2002). Literature has shown that doubts about actions perfectionism is predictive of poorer response to treatment (Chik, Whittal, & O'Neill, 2008) and global perfectionism is predictive of disordered eating, such as binge eating (Bardone-Cone, Abramson, Vohs, Heatherton, & Joiner, 2006). Perfectionism likely represents a need for control, intolerance of

uncertainty and attainment of a goal or ideal standard without adjusting thresholds, even in the face of weight loss. It is possible that there may be similarities between the aforementioned and the perfectionistic strivings that influence decisional delay, including the need for control, an intolerance of uncertainty in ambiguous situations and an inability to modify the selection threshold when deciding that there is only one 'perfect' choice and thus not selecting an alternative one. These findings offer support that perfectionistic tendencies tend to be automatic, all encompassing and difficult to suppress. Demonstrations of the automatic thoughts surrounding the need to be perfect (Flett, Hewitt, Blankstein, & Gray, 1998) may provide insight if individuals higher in perfectionism, in the current study, were more likely to be fixated on options or to evidence differential selection processes than those lower in perfectionism.

Similarly, worry and ruminative processes related to perfectionism may exacerbate decision-making processes in stressful situations. For example, rumination has been described as repetitive thinking when facing a problematic situation creating a negative mood (Nolen-Hoeksema, 1991). The purpose of rumination is thought to be to help gain clarity or solutions to relieve an uncomfortable mood (Papageorgiou & Wells, 2003), however, research has shown that this is often not the case. Rather, rumination may impair the ability to solve problems (Nolen-Hoeksema, Wisco, & Lyubomirsky, 2008), drive the focus of attention to negative thoughts associated with emotional distress, enhance the recall of negative events, and reduce adaptive coping (Nolen-Hoeksema, 2004). As perfectionism is rooted in chronic evaluation and concern over mistakes, it seems likely that perfectionistic tendencies may be accompanied by worry and rumination or may employ similar internal thought processes and effects (Di Schiena, Luminet, Philipott, & Douilliez, 2012). The encompassing nature of perfectionistic

characteristics such as constant evaluations may play a role in the ways that perfectionism may affect decisional delay.

Perfectionism and Cognitive Bias

In considering the influence of perfectionism on decisional processes, it may be beneficial to consider the potential influence of cognitive biases associated with perfectionism, including a selective attention to failure and the discounting of success (Shafran, Cooper, & Fairburn, 2002), which often result in a focus on perceived or actual errors in performance rather than on error-free areas of performance. Further, a study that investigated the relationships between perfectionism and selective attention to mistakes and failure found that individuals high in self-oriented perfectionism took longer than those low in self-oriented perfectionism to respond to failure words and to provide responses (Kobori & Tanno, 2012). These findings suggest that individuals higher in self-oriented perfectionism may be more concerned with mistakes and failures and are likely preoccupied with a tendency to be cautious in performing tasks. In addition, support is offered that individuals high in self-oriented perfectionism tended to aim for high scores or the correct response, which could be reflected in the time it took to answer. Such findings are relevant to the current study in that they help inform why individuals higher in perfectionistic concerns may take longer to select a reward choice on the current study's decision-making task. That is, decisional delay and the amount of time it takes individuals to make a selection on the decision-making task may be influenced by the degree of concern over mistakes or preoccupation with selecting the 'perfect' choice.

Emotional Influences on Decision-Making

The inherent tendency for those higher in perfectionism to want to be cautious in their approach to tasks and relevant decisional processes may be understood within the context of

related emotional processes. More specifically, research has suggested that in an attempt to regulate negative affective states in testing scenarios, individuals higher in perfectionistic concerns may be more likely to use avoidant coping behaviour by focusing on irrelevant stimuli, such as the standards others have set for them or by being distracted with worry (Dunkley, Blankstein, Halsall, & Williams, 2000; Mills & Blankstein, 2000; Weiner & Carton, 2012). In addition, it has been suggested that they may also lose focus on tasks via behavioural disengagement such as, to give only a few examples, daydreaming or procrastination which may ultimately affect performance (Weiner & Carton, 2012). As a result, these maladaptive coping techniques lead to feelings of enhanced test anxiety, as the problem remains unsolved and the student nowhere closer to finding a solution.

Consistent with Stoeber and Rennert's (2008) findings that negative reactions to imperfection were positively related to job burnout because of a perceived discrepancy between high standards for personal achievement and actual performance, it seems likely that individuals higher in perfectionistic concerns may be more vulnerable than individuals lower in perfectionistic concerns to pathology and to experiencing symptoms of distress. Given the nature of the current study, perfectionistic tendencies may enhance the distress that is experienced when faced with a decision-making task under the premise that individuals higher in perfectionistic concerns are more critical and view their perceived performance as a reflection of how well they did on the task. In addition, it is possible that those higher in perfectionistic concerns may delay decisions or behaviourally disengage if they experience distress during the task. These behaviours may be reflected in task specific outcomes as evidenced, for example, in indicators of decisional delay and how long it takes individuals to make a selection.

Perfectionism and Worry

It appears that the tendency to be self critical and focused on evaluative concerns places a strong emphasis on feelings of distress for individuals higher in perfectionistic concerns. This constant concern or worry is another factor that has been implicated in decision-making and, as previously mentioned, that has also been shown to be positively correlated with perfectionism (Flett et al., 2002; Stöber & Joorman, 2001). Specifically, research has demonstrated that those who worry more tend to be slower at making decisions, particularly in conditions of high stimulus ambiguity in a categorization task (Metzger, Miller, Cohen, Sofka, & Borkovec, 1990). The authors of this study explained their findings in terms of worriers' elevated fear of failure and greater concern for personal evaluation. When confronted with increasingly ambiguous stimuli, the worriers faced a situation in which there was no obviously correct response. As a result, and being cautious of making mistakes, worriers tended to choose to delay their decisions for as long as possible. In a replication of this study by Tallis, Eysenck and Mathews (1991), worry was found to be positively related to perfectionism and, more specifically, with dimensions of concern over mistakes and doubts about actions on the FMPS. It has been suggested that a possible interpretation of these results was that perfectionistic concern over mistakes and doubts about actions may be responsible for worriers' procrastination and indecision (Stöber & Joorman, 2001).

The current study draws from this worry component by considering how perfectionistic concerns that may be accompanied by preoccupation or worry may be associated with feelings of distress on a decision-making task involving risk. For individuals who are higher in perfectionistic concerns and who worry more about concern over mistakes and doubts about actions, a decision-making task may be more distressing for them than for others who do not

have these same concerns. In addition, the presence of uncertainty associated with the conditions of risk has the potential to be even more distressing in individuals who are likely to demonstrate perfectionistic tendencies. It is important to consider and investigate if decisional delay may stem from emotional influences on decision-making and how individuals higher in perfectionism cope with these influences.

Perfectionism and Uncertainty

Uncertainty is generally viewed as an aversive state that individuals are motivated to reduce (Hogg, 2000). In addition, unexpected events tend to increase people's physiological arousal (Price & Geer, 1972), and this arousal is likely to intensify emotional reactions to the events (Schachter & Singer, 1962). Research has supported that uncertainty intensifies affective reactions to negative events (Arenas, Tabernero, & Briones, 2006; Van Den Bos, Euwema, Poortvliet, & Maas, 2007). Literature has also indicated that the more people understand an event, the more quickly they adapt to it (Wilson & Gilbert, 2008), which helps explain why uncertainty is so unnerving. Further, it is no surprise that uncertainty has been found to be associated with anxiety, worry, and difficulty in adapting to new environments and cultures (Buhr & Dugas, 2002; Gao & Gudykunst, 1990; Van Den Bos, 2001).

As a result of the discomfort experienced with uncertainty, a construct has been developed to classify those individuals who are highly sensitive to uncertainty. Intolerance of uncertainty is a trait which denotes "a tendency to react negatively on an emotional, cognitive, and behavioural level to uncertain situations and events" (Heimberg, Turk, & Mennin, 2004, p.143). Individuals that exhibit this trait view uncertainty as stressful and upsetting, experience unexpected events as negative and try to avoid them, and believe that uncertainty has a negative impact on their ability to act (Buhr & Dugas, 2002). The construct of intolerance of uncertainty

is characterized specifically "by a tendency to perceive the future and the possibility of uncertain events as uncomfortable" (Gosselin, Ladouceur, Evers, Laverdière, Routhier, & Tremblay-Picard, 2008, p. 1428). While research on intolerance of uncertainty is fairly recent, current findings suggest that this is a relevant concept for people with eating disorders, a disorder in which perfectionism has been found to be a relevant construct of interest.

A qualitative study found that anorexia nervosa patients experienced uncertainty as stressful and wanted to avoid uncertainty at all costs (Sternheim, Konstantellou, Startup, & Schmidt, 2010). Important sources of uncertainty mentioned were fear of negative evaluation by others and feelings of being imperfect. In addition, uncertain situations led patients to feel anxious and 'out of control', resulting in a strong desire for control which manifested in extreme organizing and planning (Sternheim et al., 2010). It appears that intolerance to uncertainty shares similar ideals to perfectionism and may be a relevant construct in the current study's exploration of how perfectionism influences decision-making under conditions of perceived risk.

Research has demonstrated that those higher in perfectionism concerned with mistakes tend to be slower at making decisions because they are more likely to wait for the 'perfect' choice and they are unlikely to lower their thresholds for alternative choices regardless of risk (Patalano & Wengrovitz, 2007). In addition, they are more likely to put off decisions to ease the feelings of heightened anxiety that accompany the fear of failure in making the wrong choice. Therefore, if individuals higher in perfectionism perceive risk to a greater degree, which then accompanies heightened anxiety and decisional delay; the use of a decision-making task that creates uncertainty and distress via conditions of risk may be successful in investigating the relationship between perfectionism and decisional delay.

Avoidance of Risk and Decision-Making

In examining decisional processes, it has been proposed that decision-making under explicit risk conditions is associated with perfectionism and that specific dimensions of perfectionism, such as, perfectionistic strivings and perfectionistic concerns, may lead individuals to focus more of their attention on the rules and contingencies provided by a task (Brand & Altstötter-Gleich, 2008). More precisely, it has been suggested that individuals with high personal standards and intense concern over mistakes or doubts about actions may prefer non-risky alternatives in order to optimize the outcome of their decisions, and to avoid errors and negative feedback. In a study by Brand and Altstötter-Gleich (2008) investigating associations between perfectionism and decision-making under risk conditions, the personal standards, doubts about actions, and concern over mistakes facets of perfectionism differentially predicted performance on a risk task (e.g. the Game of Dice Task). The strongest predictor was concern over mistakes, suggesting that individuals highest in concern over mistakes selected the safe alternatives more often than those with low concern over mistakes. This type of decision-making increases the probability of avoiding negative feedback. Therefore, the authors concluded that in decisions under risk conditions, a tendency to avoid errors and potential negative feedback leads decision-makers to non-risky behaviour.

Support for avoiding risk and criticism in relation to perfectionism has also been demonstrated by professionals in academic settings. A research study looking at the relationship between perfectionism dimensions and research productivity in psychology professors suggested that professors high in self-oriented perfectionism, thus who likely have tendencies to fear failure, avoid criticism, and react negatively to perceived achievement setbacks (Hewitt & Flett, 1991), may attempt to reduce their exposure to evaluative threats and to achievement setbacks by

submitting fewer publications for review, by avoiding risky (but cutting-edge) research that may not succeed, or by submitting to journals with lower impact ratings (Frost & Marten, 1990). Results from the study found that self-oriented perfectionism made a small contribution to decreased research productivity in psychology professors, as those characterized by self-oriented perfectionism appeared to publish less frequently, to publish in lower impact journals and conduct research that is cited less often (Sherry et al., 2010). In terms of avoiding risk in professional settings, these findings inform the current study in suggesting that individuals higher in perfectionism may err on the side of caution in making decisions involving perceived risk, in attempts to avoid risk and the feelings of inadequacy or failure in selecting the perfect choice. It is possible that in order to avoid risk, individuals higher in perfectionism may attempt to distance themselves from decision-making tasks.

Psychological Distress Limits Decision-Making

In addition to perfectionism's link to actual performance outcomes, research has supported a connection between perfectionism and decision-making. A study by Hewitt, Flett, and Ediger (1995) suggested that people with perfectionistic traits use deficient forms of problem-solving. Moreover, research has shown that perfectionistic concerns have been positively correlated with emotion-focused coping, with a less efficient goal of avoiding sources of stress (Chang, 2012; Stoeber & Rennert, 2008; We et al., 2006). Other research has indicated that dysfunctional perfectionists are more likely to take longer to complete tasks, have doubts over their decisions, report negative consequences of their behaviours (Rhéaume, Freeston, Ladouceur, Bouchard, Gallant, Talbot, & Vallières, 2000), and that individuals high in overall perfectionism have problems completing tasks, and engage in more checking and safety behaviours (Lee, Roberts-Collins, Coughtrey, Phillips, & Shafran, 2011).

These decision-making tendencies of individuals higher in perfectionism are relevant to the current study by suggesting that perfectionism is influential in decision processes. Importantly, findings have suggested that individuals who were indecisive still delayed decision-making in the presence of risk and losing the ideal option in a decision-making task (Patalano & Wengrovitz, 2007) and findings also have noted that individuals higher in perfectionism have been shown to take longer to complete tasks (Rhéaume et al., 2000). Perhaps decisional delay tendencies may not be influenced by perceived risk. Thus, there has been quite an interest in the field with regard to the ways in which psychological stress can impose limitations on decision-making strategies.

Current Study

The literature that has suggested the many ways that individual variables such as personality traits may influence the decisional process (Chang, 2012; Stoeber & Rennert, 2008; Wei, Heppner, Russell, & Young, 2006), as well as how emotional responses may play a role in decision-making and risk (Flett et al., 2002; Stöber & Joorman, 2001), however, the ways in which perfectionism influences decisional delay under conditions of risk has yet to be examined. The current study aims to extend previous literature by investigating how perfectionism may moderate the relationship between perceived risk and decisional delay. More specifically, we are interested in whether perfectionism influences decisional delay in a postsecondary sample on a decision-making task under differing conditions of perceived risk. The current study will look at how various perfectionism dimensions relate to outcomes indicative of decision-making processes, such as selection difficulty, stress reactivity, and decisional delay. Peripheral relationships looking at characteristics that have been shown to be related to decision-making, such as intolerance of uncertainty and indecisiveness will also be explored to ensure there are no

differences between groups at baseline. A reward based decision-making task will be used to explore these relationships.

Hypotheses

The first hypothesis is that perfectionism will moderate the relationship between risk condition and decisional delay, with those higher in perfectionism and also in the high risk condition having the slowest reaction time to make a selection on the decision-making task.

The second hypothesis is that perfectionism will moderate the relationship between risk condition and selection difficulty, with those higher in perfectionism and also in the high risk condition having the most difficulty making a selection.

The third hypothesis is that perfectionism will moderate the relationship between risk condition and level of distress, with those higher in perfectionism and also in the high risk condition reporting the most distress.

Method

Participants

Ninety Laurentian University and Georgian College undergraduate students (women n = 75, men n = 15) were recruited for a study on individual preferences and how personality affects people's interests. Participants ranged in age from 18 to 43 years (M = 20.48, SD = 4.25). A detailed breakdown of the demographic characteristics, by condition and for the overall sample, is presented in Table 1. No statistically significant differences between groups were noted.

Measures

Demographic Information. A demographic questionnaire (see Appendix A) was developed for this study to ask participants questions regarding cultural heritage, age, program year, and education status.

Table 1

Descriptive Statistics of Demographic Variables

	Risk Condition		
	Low	High	Total
Characteristic	*M (SD)*	*M (SD)*	*M (SD)*
Age	20.43 (5.08)	20.52 (3.33)	20.48 (4.25)
	N (%)	*N (%)*	*N (%)*
Gender			
Female	39 (88.6)	36 (78.3)	75 (83.3)
Male	5 (11.4)	10 (21.7)	15 (16.7)
Campus			
Barrie	7 (15.9)	8 (17.4)	15 (16.7)
Sudbury	37 (84.1)	38 (82.6)	75 (83.3)
Heritage			
Black	2 (4.5)	4 (8.7)	6 (6.7)
South Asian	2 (4.5)	2 (4.3)	4 (4.4)
White	36 (81.8)	37 (80.4)	73 (81.1)
Other	4 (9.2)	3 (6.6)	7 (7.8)
Intended Major			
Psychology	13(29.5)	16(34.8)	29(32.2)
Sociology	1(2.3)	—	1(1.1)
English	1(2.3)	—	1(1.1)
History	1(2.3)	—	1(1.1)
Nursing	6(13.6)	3(6.5)	9(10.0)
Social Work	5(11.4)	7(15.2)	12(13.3)
Business	3(6.8)	2(4.3)	5(5.6)
Biology	7(16.0)	5(11.0)	12(3.3)
Other	7(15.8)	13(28.2)	20(32.3)
Program Year			
Year 1	24(54.5)	22(47.8)	46(51.1)
Year 2	12(27.3)	14(30.4)	26(28.9)
Year 3	7(15.9)	4(8.7)	11(12.2)
Year 4	1(2.3)	6(13.1)	7(7.8)
Educational Status			
Full-time	44(100)	46(100)	90(100)

Perfectionism. Two measures of perfectionism were used in this study.

The Multidimensional Perfectionism Scale (MPS, [Hewitt & Flett, 1991]) is a 45-item questionnaire (see Appendix B) that measures three trait dimensions of perfectionism: self-oriented perfectionism (SOP), other-oriented perfectionism (OOP), and socially-prescribed perfectionism (SPP). The SOP subtype measures unrealistic standards and perfectionistic motivation directed toward oneself, OOP assesses unrealistic standards and perfectionistic motivations one directs toward others, and SPP evaluates the extent to which one believes that others expect them to be perfect (Hewitt & Flett, 1991). Previous studies (Hewitt & Flett, 1991) have noted good reliability for all three MPS subscales: SOP (α = .86), OOP (α = .82), SOP (α = .87). Participants were asked to respond to a series of statements using a 7-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree). The scoring on the MPS was completed by summing the scores on items included in each subscale. Higher subscale scores were indicative of a greater degree of the specified perfectionistic predisposition.

The Frost Multidimensional Perfectionism Scale (FMPS, [Frost et al., 1990]) is a 35-item questionnaire (see Appendix C) that was used to assess six dimensions of perfectionism: concern over mistakes (COM), doubts about actions (DA), personal standards (PS), parental expectations (PE), parental criticism (PC), and organization (O). The present study was specifically interested in the COM, PS, and DA dimensions as these assess constructs that were particularly relevant in decision-making processes of interest in the current study. Previous studies (Frost et al., 1990) have noted good reliability for all FMPS subscales (α = from .77 to .93). Participants were asked to respond to a series of statements using a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The scoring on the FMPS was completed by summing the scores

on all relevant items. Higher subscale scores were indicative of a greater degree of the specified perfectionistic dimension.

Intolerance of Uncertainty. The Intolerance of Uncertainty Scale-Short Form (IUS-12, [Carleton, Norton & Asmundson, 2007]) is a 12-item questionnaire (see Appendix D) developed to measure responses to uncertainty, ambiguous situations, and the future using a two factor structure (Inhibitory Anxiety and Prospective Anxiety). The Prospective Anxiety (PA) factor looked at fear and anxiety based on future events and the Inhibitory Anxiety (IA) factor looked at uncertainty inhibiting action or experience (Carleton et al., 2007). Previous studies (Carleton et al., 2007) have shown the IUS-12 total score to have excellent internal consistency ($\alpha = .91$), as did both factors ($\alpha = .85$ for each). Participants were asked to respond to a series of statements using a 5-point Likert scale ranging from 1 (not at all characteristic of me) to 5 (entirely characteristic of me). The scoring on the IUS involved summing the scores on all of the items. A higher total score was indicative of higher intolerance of uncertainty.

Indecisiveness. The Indecisiveness Scale (Frost & Shows, 1993) is a 15-item questionnaire (see Appendix E) that measures how individuals approach decision situations, specifically the tendency of postponing decisions. Previous studies (Frost & Shows, 1993; Patalano & Wengrovitz, 2006) have noted good internal reliability of the Indecisiveness Scale ($\alpha = .83$-$.88$). Participants were asked to respond to a series of statements using a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The scoring on the Indecisiveness Scale involved summing the scores on all items. A higher total score was indicative of higher degree of indecisiveness.

Stress Reactivity. In the current study, visual analogue stress reactivity scales were used to gather information regarding situational anxiety and indicators of levels of distress

experienced before and after the decision-making task. Visual analogue scales (VAS) have been used to measure a variety of experiences in social and behavioural research, including health outcomes (Wewers, Rachfal, & Ahijevych, 1990), mood (Folstein & Luria, 1973) and anxiety (Kellner & Sheffield, 1968; Duinen, Rickelt, & Griez, 2008). Visual analogue scales have gained popularity due to the simplicity and efficiency involved in the quick and straight forward administration (Aitken, 1969; Killgore, 1999; Torrance, Feeny, & Furlong, 2001; Wewers & Lowe, 1990). The internal consistency of a VAS that measured mood in adults (Kontou, Thomas, & Lincoln, 2012) was revealed to be high ($\alpha = .74$). Each scale consisted of 5 questions (see Appendix) where participants specified their level of agreement to a statement by indicating a position along a continuous line between two end-points. A composite stress reactivity score was calculated by summing all five questions. The statements presented were: “I feel conflicted”, “I feel tense”, “I feel worried”, “I feel nervous”, and “I feel stressed”. Responses were recorded using a visual analogue scale with values ranging from -10 (little or no stress) to +10 (great deal of stress).

Indiscriminant Responses. An Indiscriminant Response Scale (IRS) was developed and indiscriminant response items were embedded within the Perfectionism Scales, the Indecisiveness Scale and the Intolerance of Uncertainty Scale to look for patterns of inattentive responding in participants. Inattentive responding was defined as total IRS scores of three or below out of six possible correct responses, indicating scores of 50% or lower for selecting the correct response when prompted.

Decision-Making Task

The current study used a decision-making task to measure decisional delay and decision-making processes. The layout of the current manipulation was modeled after the decision-

making task used by Patalano and Wengrovitz (2007) who investigated whether individuals adjust behaviour in response to potential risks associated with delaying decisions. Findings suggested that indecisive individuals did not alter behaviour in response to potential risks. The study employed two simulated five-day college course selection periods in which new course alternatives appeared on each day (total of 13 courses) and a design that had two risk conditions. Seat availability changed daily and was provided to participants. In the risk-free condition, no risks were associated with delay of decision-making over the days and seat availability was high (more than ten seats per course). In the risk condition, each day of delay was associated with a risk of losing existing course alternatives and seat availability was low (fewer than five seats per course) and could become full, as did two courses in this design.

The decision-making task in the current study was modeled after the course selection task, with reward options being presented to participants instead of courses. Due to tendencies associated with perfectionism, the decision not to use courses was based on the idea that student participants higher in perfectionism may be prone to feel more pressure when dealing with academic topics. In addition, for the purposes of the current study, hypothetical scenarios such as the course selection task did not appear to be as salient as personally relevant constructs such as selecting reward options that a participant would actually receive. The objective of personally relevant options was to avoid behavioural disengagement on the part of the participants. In addition, personal relevance had important implications when dealing with perfectionism. Personal relevance may tap into feelings of responsibility in individuals which may be linked to a greater intolerance of uncertainty and distress in making a selection for individuals higher in perfectionism. Specifically, the current decision-making task was framed to be a real-life (not hypothetical) and personally relevant task, in hopes of learning more about the pressure

associated with choice selection in relation to perfectionistic tendencies such as checking behaviours (Lee et al., 2011), fear of failure (Egan et al., 2013), concern over mistakes and critical self-evaluations (Blankstein & Dunkley, 2002; Chang, 2012; Frost, et al., 1990).

Reward Decision-Making Task. The pretext for the decision-making task was that it was a token of appreciation (reward) for their participation in the study. The task consisted of screens on which a set of three reward options were displayed at a time and in a fixed order. As participants clicked through screens, different combinations of options appeared, either adding new options or removing previously seen options on later screens. Reward options were presented with a visual photo as well as a written name.

Three actions were available on each of the reward selection screens. The first option was to click on a "Go to Next Screen" button to update the screen with a different set of reward options. Another was to click on the desired reward option and the "Finalize Choice" button to make a selection and end the task. Lastly, after participants made an initial selection, they were asked if they were certain of their reward choice and would like to claim the specified reward or they could opt to again look at more options. Here, participants chose to select their reward choice and complete the task, or participants were directed to continue the task on the next screen with a new set of reward alternatives.

In addition to the set of reward options available on each screen, the only information that changed across screens was item availability, in order to simulate an update of the remaining number of specified reward options remaining. In the low risk condition, availabilities were high (more than ten remaining per option), and no options were in danger of becoming unavailable. In the high risk condition, availabilities were low (fewer than two remaining per option) and reward items were in danger of becoming unavailable (indicated by 0 availability). In the high risk

condition, five options became unavailable over the course of the reward task. Once an option became unavailable, it remained that way for the remainder of the decision-making task.

Reward Options. Twelve reward options were offered to participants, varying in the value and certainty of rewards received. Rewards carrying values of $5 were those that were received immediately (e.g. a $5 Tim Hortons card received after the completion of the participant's testing session) and rewards carrying values of $25 were those that were delayed because they were entries into draws (e.g. an entry into a draw to win a $25 gift card to the Keg at the end of the entire study). For example, the rewards included the following for the $5 gift cards: Subway, Tim Hortons, Starbucks, Cineplex, Walmart, Shoppers Drugmart, and the following for the $25 gift cards: the campus bookstore, Cineplex, Amazon, The Keg, Bon Appetit, Walmart.

Manipulation Check. A manipulation check was used to assess the effectiveness of the risk condition task manipulation. Participants were asked to respond to the following statement after completing the decision-making task: "How much risk did you perceive was involved with making the decision?". Responses were recorded using a visual analogue scale with values ranging from -10 (little or no risk) to +10 (great deal of risk).

Decision Difficulty, Satisfaction, and Confidence. Selection difficulty was measured using three statements modified from Milgram and Tenne (2000) that target how challenging it was to make a selection on the decision-making task. The statements were: "It was difficult to arrive at a decision", "I struggled in making a decision", and "I felt a sense of pressure during the decision-making task". Responses were recorded using a visual analogue scale with values ranging from -10 (little or no difficulty) to +10 (great deal of difficulty).

Selection satisfaction was measured by asking participants the following statement: “I feel satisfied with my selected reward choice” and responses were also recorded on a visual analogue scale ranging from -10 (not at all satisfied) to +10 (very much satisfied).

Lastly, confidence in the reward choice was measured using a single item yes/no question, “Do you want to change your selection and select a difference available remuneration option?”. If yes was selected, participants were prompted to select the reward choice they preferred from a complete list of reward items. Regardless of whether participants changed their selection, participants were asked a qualitative single item follow-up question to indicate why they chose either to change or not to change their initial selection.

Reaction Time. Reaction time (in milliseconds) on the decision-making task was recorded using MediaLab as an indicator of decisional delay. Average reaction time on the task screens as well as total reaction time on the decision-making task were calculated in order to examine potential sources of influence on the length of time it took participants to select a reward item.

Procedure

Ethics approval for this research was obtained from the Laurentian University Research Ethics Board (see Appendix F). Potential participants were recruited for a study investigating how individual differences affect what people are interested in and the way in which people think about things. Undergraduate students from Laurentian University and Georgian College were recruited from the Barrie and Sudbury campuses. Sudbury participants were recruited through classroom recruitment and campus posters and Barrie participants were recruited through the SONA online experiment management system or posters on campus.

The study was completed in one session lasting approximately 20 minutes and was administered on a computer using MediaLab software. Following informed consent (see Appendix G) participants were asked to complete a series of demographic questions as well as the MPS and the Indecisiveness Scale. Participants were then presented with the baseline measure of stress reactivity, the FMPS and the IUS. Once completed, participants were randomly assigned to one of two risk conditions, high risk or low risk, and were asked to follow the instructions presented on the computer screen to complete the reward decision-making task. Following the reward task, participants were presented with the selection satisfaction questions and immediately thereafter with the risk manipulation check. Participants then completed the post-task stress reactivity questions, the selection difficulty questions, the confidence in selection questions and a final selection satisfaction item. Upon completion, participants were debriefed (see Appendix H) and compensated for their time. Barrie campus participants received partial course credit through SONA as well as the reward choice selected from the task and Sudbury campus participants received course credit if it was being offered by their professors, as well as the reward choice selected from the task.

Results

Data Screening

During data screening, the data from two participants were removed due to inattentive responding as evidenced by total scores of three or below out of six possible correct responses on the indiscriminant response items. Participants whose data were removed both scored 1 out of 6 on the IRS. Based on this screening, data from 90 participants (instead of 92) was used for the analyses.

The data were also screened for univariate outliers indicated by standardized z-scores larger than +/-3 standard deviations. It is considered unusual for an observation to be more than 3 standard deviations from the mean (Stevens, 2002); therefore observations greater than +/- 3 standard deviations were recorded as extreme values and were removed from analyses. In total, two univariate outliers on the average reaction time and one univariate outlier on the total reaction time item were identified and removed from analyses.

Sample Characteristics

Pre-test means relative to established norms. Baseline indicators of COM, DA, and PS perfectionism on the FMPS, for the current sample of undergraduate students, were comparable to established norms from previous research using post-secondary samples (Adkins & Parker, 1996; Di Schiena, Luminet, Philippot, & Douilliez, 2012; Kawamura, Frost, & Harmatz, 2002; Lynd-Stevenson & Hearne, 1999; Stoeber, 1998). For baseline indicators of perfectionism on the Hewitt and Flett MPS, mean scores for the SOP subscale in the current study were slightly higher than the means and standard deviations Hewitt and Flett (2004) reported as norms for student sample respondents. Mean scores for SPP were comparable.

Baseline differences between groups. To determine whether there were any baseline differences on scales between the two risk conditions, a series of independent sample *t*-tests were run. No significant differences between conditions were observed on any of the baseline perfectionism, uncertainty and indecisiveness indicators (all $p_s > .05$). A summary of baseline means and standard deviations for all scales, by condition and for the sample as a whole, is presented in Table 2.

In addition, to determine if there were any significant differences at baseline on stress reactivity items between the high and low risk conditions, independent-sample *t*-tests were

conducted. Only one significant between-group difference was noted at baseline for one of the five stress reactivity questions (i.e. I feel tense). Scores for stress reactivity had a possible range of -10 to +10, with lower values indicating less stress. Stress reactivity was higher for the low risk condition (M = -1.20, SD = 6.51) than the high risk condition (M = -4.35, SD = 5.48), $t(88)$ = 2.483, p = 0.02. No other significant between group differences were noted at baseline (all p_s > .05) for the remaining four indicators of stress reactivity.

Table 2

Baseline Means and Standard Deviations for Study Scales

	Level of risk		
	Low	High	Total
Scale/Subscale	*M (SD)*	*M (SD)*	*M (SD)*
MPS: self-oriented	73.73 (12.92)	75.41 (12.20)	74.59 (12.51)
MPS: socially-prescribed	57.23 (11.43)	57.22 (14.92)	57.22 (13.25)
FMPS: concern over mistakes	23.05 (6.73)	24.35 (8.63)	23.71 (7.75)
FMPS: personal standards	24.77 (4.01)	25.28 (5.07)	25.03 (4.56)
FMPS: doubts about actions	11.20 (3.86)	11.41 (3.91)	11.31 (3.87)
Indecisiveness	44.64 (10.47)	45.41 (10.85)	45.03 (10.61)
IUS: prospective anxiety	21.64 (6.02)	21.30 (6.10)	21.47 (6.03)
IUS: inhibitory anxiety	13.07 (4.96)	12.28 (5.21)	12.67 (5.08)

Note. MPS = Multidimensional Perfectionism Scale, FMPS = Frost Multidimensional Perfectionism Scale, IUS = Intolerance of Uncertainty Scale.

Scale Reliabilities for the Current Sample

A reliability analysis of scales used in the study revealed acceptable to good internal consistency, as indicated by alpha coefficients above 0.70 for all indicators (Cronbach, 1951; Bland & Altman, 1997). A summary of scale reliabilities for each of the perfectionism, intolerance of uncertainty, and indecisiveness measures are presented in Table 3.

Table 3

Reliability Analysis of Study Scales and Subscales

Scale	Cronbach's Alpha	Number of Items
MPS: self-oriented	.85	15
MPS: socially-prescribed	.81	15
FMPS: concern over mistakes	.86	9
FMPS: doubts about actions	.76	4
FMPS: personal standards	.73	7
IUS: inhibitory anxiety	.87	5
IUS: prospective anxiety	.85	7
Indecisiveness Scale	.85	15

Note. MPS = Multidimensional Perfectionism Scale, FMPS = Frost Multidimensional Perfectionism Scale, IUS = Intolerance of Uncertainty Scale.

Inter-relatedness of Measures at Baseline

Correlation analyses were used to examine the relationships among predictor variables at baseline: perfectionism dimensions, intolerance of uncertainty and indecisiveness. Correlations

among all perfectionism measures are presented in Table 4. In general, the results suggest that there are moderate positive relationships across all perfectionism indicators, with the exception of the relationship between DA and SOP which was not significant.

The correlation matrix for all predictor variables is presented in Table 5. The results suggest that there are weak to moderate positive relationships across all indicators, with the exception of the relationships between IND and SOP, SPP and PS which were not significant.

Table 4

Correlations amongst the Perfectionism Measures across Participants at Baseline

Measures	SOP	SPP	DA	COM	PS
SOP	1	.49*	.18	.43**	.65**
SPP	--	1	.35**	.63**	.33**
DA	--	--	1	.54**	.25*
COM	--	--	--	1	.41**
PS	--	--	--	--	1

Note. *$p < .05$, ** $p < .01$. SOP = self-oriented perfectionism, SPP = socially-prescribed perfectionism, DA = doubts about actions, COM = concern over mistakes, PS = personal standards.

Table 5

Correlations between Perfectionism, Intolerance of Uncertainty, and Indecisiveness Scores across all Participants at Baseline

Scale	PAX	IAX	IND
SOP	.45**	.24*	-.05
SPP	.43**	.37**	.136
DA	.55**	.58**	.54**
COM	.58**	.52**	.29**
PS	.46**	.22*	-.17

Note. * $p < .05$, ** $p < .01$. SOP = self-oriented perfectionism, SPP = socially-prescribed perfectionism, DA = doubts about actions, COM = concern over mistakes, PS = personal standards, PAX = prospective anxiety IAX = inhibited anxiety, IND = Indecisiveness.

Risk Perception Manipulation Check

A manipulation check was performed to determine if the risk manipulation in the decision-making task had its intended effect by checking to see whether risk perception differed across the two risk conditions. Participants were asked "How much risk did you perceive was involved with making the decision?" and responded on a visual analogue scaled that ranged from -10 (little or no risk) to +10 (great deal of risk).

An independent samples *t*-test revealed no significant difference in risk perception between conditions, $t(88) = .09$, $p = .93$, $d = .02$. These findings suggest that the risk perception manipulation did not elicit distinct group differences on this variable of interest. As such, it is believed that including risk condition as a main variable of interest might not accurately test the

study's initial interaction hypotheses and may provide potentially misleading interpretations of the study findings. Thus, the initial interaction hypotheses will not be explored and, rather, the related associations for the hypotheses will be tested.

Analysis Overview

A series of multiple regression analyses were completed examining the effects of various perfectionism indicators on outcomes measures of interest in the study. Each regression model included one perfectionism dimension (SOP, SPP, COM, DA, or PS) and the risk condition variable (high or low risk) as predictors, with the latter included to account for any potentially subtle influence of the risk condition manipulation on the hypotheses. In addition, for each stress reactivity regression model, the baseline measure of stress reactivity was also included as a predictor in order to account for where participants started on the stress reactivity continuum prior to completing the decision-making task.

For each regression, assumptions were explored prior to running the analyses. Specifically, visual inspection of scatterplots was used to examine linearity, the Durbin-Watson statistic was used to explore independence of residuals, and homoscedasticity was assessed by visual inspection of a plot of standardized residuals versus standardized predicted values. All assumptions were met, although six multivariate outliers for average reaction time, one multivariate outlier for total reaction time, and one multivariate outlier for stress reactivity were identified and removed from analyses.

Tests of the Effect of Perfectionism on Selection Difficulty

The composite selection difficulty outcome was used in a regression model to investigate the relationships between various perfectionism dimensions and difficulty making a selection on the decision-making task. Across this indicator, COM, DA, and SPP significantly predicted

selection difficulty. The remaining perfectionism facets (SOP, PS) as well as the condition variables were not predictive of selection difficulty (all $p_s > .05$). Regression coefficients can be found in Table 6.

Significant Predictors of Selection Difficulty

The multiple regression model with COM and condition statistically significantly predicted the selection difficulty outcome, $F(2,87) = 6.31$, $p = < .01$, adj. $R^2 = .11$. More specifically, COM significantly predicted the degree of difficulty arriving at a decision.

The multiple regression model with DA and condition statistically significantly predicted the selection difficulty outcome, $F(2,87) = 3.72$, $p = .03$, adj. $R^2 = .06$. More specifically, DA significantly predicted the degree of difficulty arriving at a decision.

The multiple regression model with SPP and condition statistically significantly predicted the selection difficulty outcome, $F(2,87) = 4.95$, $p = .01$, adj. $R^2 = .08$. More specifically, SPP significantly predicted the degree difficulty arriving at a decision.

Tests of the Effect of Perfectionism on Stress Reactivity

The composite stress reactivity indicator was used in separate regression models to investigate the relationships between various perfectionism dimensions and levels of stress after completing a decision-making task. Across these indicators, COM statistically significantly predicted the degree of stress after the decision-making task. The remaining perfectionism facets (SOP, SPP, DA, and PS) as well as the condition variables were not predictive of stress reactivity (all $p_s > .05$). Regression coefficients can be found in Table 7.

Significant Predictor of Stress Reactivity

The multiple regression model with COM, condition, and baseline stress measure statistically significantly predicted the stress reactivity outcome, $F(3,85) = 27.04$, $p = < .01$, adj.

R^2 = .47. More specifically, COM, significantly predicted the degree of stress reactivity. The analysis showed that the baseline stress variable did not significantly predict stress reactivity (all p_s > .05).

Table 6

Summary of Multiple Regression Analyses Examining Perfectionism Dimensions Related to Selection Difficulty Outcomes (N = 90)

Perfectionism Dimension	Selection Difficulty			
	B	*β*	*p*	*sr²*
SOP	.22	.17	.11	.04
SPP	.31	.26	.01*	.07
COM	.63	.30	< .01**	.09
DA	.86	.21	.05*	.04
PS	.28	.08	.46	.01

Note. *p < .05, **p <. 01. The condition variable was not presented in the table because it was not significant in any of the models (all p_s > .05). SOP = self-oriented perfectionism, SPP = socially-prescribed perfectionism, DA = doubts about actions, COM = concern over mistakes, PS = personal standards.

Table 7

Summary of Multiple Regression Analyses Examining Perfectionism Dimensions Related to Stress Reactivity Outcomes (N = 89)

Perfectionism Dimension	Stress Reactivity			
	B	*β*	*p*	sr^2
SOP	.15	.08	.34	.01
SPP	.03	.02	.86	< .00
COM	.83	.28	< .01**	.05
DA	.71	.11	.24	.01
PS	.50	.09	.26	.01

Note. *p < .05, **p < .01. The condition variable was not presented in the table because it was not significant in any of the models (all p_s > .05). SOP = self-oriented perfectionism, SPP = socially-prescribed perfectionism, DA = doubts about actions, COM = concern over mistakes, PS = personal standards.

Tests of the Effect of Perfectionism on Decisional Delay

Multiple regression analyses were run to test the hypotheses examining the relationship between perfectionism dimensions and decisional delay indicators. Regression analyses on the reaction time measures indicated that there were no significant perfectionism related predictors of decisional delay. The multiple regression models with perfectionism dimensions (SOP, SPP, COM, DA, and PS) and condition did not significantly predict average reaction time or total time to complete the decision-making task (all p_s > .05). Regression coefficients can be found in Table 8.

Table 8

Summary of Multiple Regression Analyses Examining Perfectionism Dimensions Related to Decisional Delay

Perfectionism Dimension	Average reaction time on task (N = 84)				Total reaction time on task (N = 89)			
	B	*β*	*p*	*sr²*	*B*	*β*	*p*	*sr²*
SOP	-18.09	-.05	.65	< .00	-209.66	-.08	.45	.01
SPP	-5.14	-.11	.89	< .00	-21.24	-.01	.94	< .00
COM	-57.89	-.10	.37	.01	324.74	.08	.47	.01
DA	-70.44	-.06	.59	< .00	720.29	.09	.42	.01
PS	24.78	.03	.82	< .00	-723.40	-.10	.34	.01

Note. $*p < .05$, $**p < .01$. The condition variable was not presented in the table because it was not significant in any of the models (all $p_s > .05$). SOP = self-oriented perfectionism, SPP = socially-prescribed perfectionism, DA = doubts about actions, COM = concern over mistakes, PS = personal standards.

Discussion

The current study examined the influence of perfectionism on outcomes of selection difficulty, stress reactivity and decisional delay after completing a reward item decision-making task. Overall, findings from this research demonstrated that certain perfectionism dimensions predicted decision-making processes, such as selection difficulty and stress reactivity, but did not predict decisional delay. In general, the findings from this study support the notion that perfectionism is linked to decision-making.

Although the original statement of hypotheses focused on the interaction between perfectionism dimensions and risk condition, results of the risk condition manipulation check

indicate that no statistically significant differences were observed between the high and the low risk groups. Given the uncertainty around the influence of the risk manipulation, it was not felt that it would be appropriate to specifically comment on an interaction between perfectionism and risk. Consequently, the analysis and discussion focused on the examination of the relationships between individual perfectionism predictors and the outcome variables of interest.

Selection Difficulty

In terms of selection difficulty, some of the perfectionism dimensions predicted difficulties associated with making a selection on the decision-making task. Specifically, COM, DA, and SPP predicted selection difficulty. That is, these perfectionism dimensions were predictive of the degree of selection difficulty. These findings may suggest that tendencies related to lack of confidence in actions or decisions predicted the degree of selection difficulty. Consequently, these dimensions, in relation to the need for perfect outcomes, may be indicative of a preoccupation with a set standard for making a decision and a fixation with avoiding mistakes or selecting the wrong reward.

The findings that those higher in COM and DA have a harder time making a selection are consistent with previous research that suggested those higher in perfectionism have more trouble completing tasks and engaged in more checking behaviours (Lee et al., 2011). These findings support the idea that individuals preoccupied with concerns over mistakes may approach decisions with more caution to avoid making errors and are consistent with those of Brand and Altstotter-Gleich (2008) who found that COM was the strongest predictor of performance on a risk task. More specifically, participants higher on COM were more likely to select safer alternatives as a way of avoiding negative feedback. Based on results of both the current study and previous research, there is support to suggest that dimensions of perfectionism involving a

preoccupation with making the right choice and a desire to look at options with caution influence perceived selection difficulty on reward decision-making tasks. It is possible that individuals higher in perfectionism require a greater degree of certainty in their decision before making a selection, which perhaps enhances the cognitive awareness of the pressure to decide and the need for more self-reassurance and certainty than those lower in perfectionism to make a selection. In addition, the task of comparing and switching between reward items may also be quite taxing for individuals who have difficulty making decisions. These tendencies of wanting to select the optimal choice and having a higher threshold for certainty may therefore offer explanation for a having harder time selecting a reward item. It is plausible that individuals higher in dimensions related to avoiding mistakes and regret from making a selection may be less certain in their selection and therefore have more difficulty making decisions, especially if these individuals are more likely to want to hold out for the optimal selection.

In terms of more trait-like dimensions of perfectionism, it was found that having the tendency to set and meet high standards or a preoccupation with perceived expectations of others was shown to be predictive of selection difficulty. Specifically, SPP predicted selection difficulty on the decision-making task, whereas SOP did not. For these dimensions, it is possible that the predictive differences may lie within the locus of control. Research has demonstrated that SOP is related to both intrinsic and extrinsic motivation, but tended to show stronger and more consistent relationships with intrinsic motivation (Mills & Blankstein, 2000; Miquelon & Vallerand, 2005; Van Yperen, 2006). Moreover, individuals higher in SOP aim to meet high standards and goals which might have led to difficulty selecting a reward choice because the optimal outcome or goal was not explicitly stated.

On the contrary, SPP showed stronger and more consistent positive correlations with extrinsic motivation (Mills & Blankstein, 2000; Miquelon & Vallerand, 2005; Van Yperen, 2006). Although both types of perfectionism evidence drive for high standards, the emphasis on locus of control may be a key contributing factor. There may be differences in making a selection when comparing feelings of pressure from others to make a decision to feelings of pressure placed on oneself. Those higher in SPP may have felt more external pressure in making decisions, especially since there was a researcher present in the room when the study took place. Therefore it is possible that a lack of confidence in meeting standards set by others or a lack of control over expectations may play a role in decision-making. On the other hand, those higher in SOP may not experience these same pressures since the main source of pressure is internally located. Overall, the findings of the present study indicate that selection difficulty was not consistently predicted across all perfectionism dimensions, suggesting perhaps only the critical and fear of error characteristics of perfectionism are key indicators of selection difficulty.

Stress Reactivity

When looking at stress reactivity, the findings from the current study suggest that only one perfectionism dimension predicted the degree of stress after completing a decision-making task. Specifically, the degree of stress reactivity characterized by feeling conflicted, tense, worried, nervous, and stressed was predicted by COM. Alternatively, SOP, SPP, DA and PS were not found to be predictive of stress reactivity. These significant results support previous research that suggests a relationship between perfectionism and stress exists (Bottos & Dewey 2004; Chang, 2000; Chang, Watkins, & Banks, 2004; Chang, 2006; D'Souza, 2011; Dunkley & Blankstein, 2000; Flett & Hewitt, 2002; Short & Mazmanian, Oinonenm, & Mushquash, 2013). Results from the current study, whereby the COM perfectionism dimensions predicted stress

reactivity, are also consistent with previous research that showed higher degrees of COM perfectionism were associated with higher physiological stress responses after completing performance tasks (Besser, Flett, Hewitt & Guez, 2008). Therefore, it appears as though making decisions may be more stressful for individuals higher in certain perfectionism dimensions but it may also be the case that different types of tasks elicit such stress responses more than others.

Those higher in perfectionism tend to place a high degree of pressure on every task, decision, and performance and the pressure of living up to these high standards can be stressful. For the current study, it is possible that COM may have affected stress responses as well as the performance on the decision-making task, in terms of the ability to make a decision. In particular, there is research to suggest that stress may amplify risk and threat sensitivity which can lead to disadvantageous decision-making, even in situations where no threat exists (Korte, 2001; Sapolsky, 2000; Starcke, Wolf, Markowitsch, & Brand, 2008; Yu, 2016). In this study, it is possible that individuals who were higher in COM were more likely to predict a greater degree of stress on the decision-making task as a result of the perception of threat related to the preoccupations with a fear of failure and errors that accompany this perfectionism dimension.

Moreover, the findings that perfectionism predicted the level of stress reactivity may be further explained by a decision bias related to perceived threat. This pattern of perfectionism and stress reactivity to threat has been suggested in research depicting how perfectionism was positively related to stress reactivity to failure (Flett, Nepon, Hewitt and Fitzgerald, 2016; Frost et al., 1995; Hewitt & Flett, 2002; Hewitt et al., 2008). Further, the cognitive distortions that stem from perfectionism tend to surround failure being paired with negative consequences such as proof of unworthiness, humiliation, or signs of weakness (Enns & Cox, 2002). These patterns of thinking influence the ways in which individuals navigate everyday life and perhaps, in this

study, tap how participants made decisions and the stress experienced as a result of biases. To support this idea, research has suggested that during stressful experiences, individuals have less cognitive control, meaning that exposure to stress reduces the ability to make decisions effectively, as well as reduces the ability to regulate emotional and cognitive responses to stimuli presented (Nolen-Hoeksema, 2012; Yu, 2016). As a result, there is a tendency to make decisions based on emotional reactions and biases instead of conscious reasoning. Taken as a whole, the stress reactivity findings from the current study may be best explained from the perspective of sensitivity to stress and threat of failure associated with higher levels of COM, which may have been targeted during the decision-making task.

Decisional Delay

A goal of this study was to extend on the paucity of research investigating associations between perfectionism and decisional delay by examining reaction time on a decision-making task. Findings from the current study suggest that perfectionism did not significantly influence decisional delay based on how long it took to complete the task, as indicated by measures of both average and total reaction time on the selection based decision-making task. Findings of the current study concur with previous research which found no significant difference in task completion time between those low in SOP and those high in SOP on a probability inference task (Kobori & Tanno, 2008). The results of the current study are also divergent with previous research that looked at response times. For example, a study of performance that looked at perfectionism and selective attention to mistakes using a modified Stroop task with failure and neutral words revealed that participants with high SOP took longer to respond to failure words as well as all task trials than those low in SOP (Kobori & Tanno, 2012). It was suggested that emotional concern for mistakes or failure was likely greater for individuals high in SOP that of

individuals low in SOP. Authors suggested that these findings may reflect a desire to be precise and a preoccupation with perfect choices, therefore a tendency to be cautious in performing tasks. Taken together, it is possible that individuals who are higher in perfectionism may be more likely to worry about the decisions with which they are faced and this could result in slower decisions (i.e. longer response times).

In another study that used a cancellation task, perfectionistic striving was significantly correlated with response time and accuracy whereas COM was not (Stoeber, Chesterman, & Tarn, 2010). Moreover, it was revealed that response time mediated the relationship between perfectionistic striving and performance. That is, individuals scoring high on perfectionistic strivings exerted greater effort towards accuracy, rather than speed, than did those low in perfectionistic strivings. The authors suggested it is possible that delayed responding is how individuals who score high on perfectionistic strivings achieve superior outcomes on tasks without time limits (Stoeber et al., 2010). Perhaps there is a preoccupation with accuracy rather than speed, suggesting that efficiency is not necessarily as important as an accurate performance. To support this idea, previous research by Slade, Newton, Butler, and Murphy (1991) demonstrated that those high in perfectionism performed better based on accuracy on a letter search task than those low in perfectionism. These findings offer more support for the idea that accuracy appears to be an important component to those higher in perfectionism.

Although there appears to be inconsistent findings in the literature regarding the relationship between perfectionism and response times on decision-making and performance tasks, it appears as though perfectionism influences may differ in part based on the demands of the task. These demands may include a variety of outcomes, such as accuracy, completion, reaction time, efficiency, and information gathering. It appears as though tasks that focus on

accuracy demonstrate a significant link between perfectionism and response times, with those high in perfectionism dimensions taking longer to complete tasks (Kobori & Tanno, 2012; Stoeber et al., 2010). It is possible that longer reaction times are a result of increased value ascribed to accuracy over efficiency. There is also evidence that when the tasks are not accuracy based, the influence of perfectionism on reaction time is not significant (Kobori & Tanno, 2008). Perhaps it is possible that the nature of the task is indicative of the relationship between perfectionism and response times, and more specifically of the relationship between perfectionism and accuracy. With the current study using a decision-making task that focuses on completion rather than on accuracy, finding a non significant influence of perfectionism on decisional delay using reaction time might be best explained by the demands of the task and the lack of focus on accuracy.

Lastly, of interest in the current study was the discovery that PS and SOP, which have been considered to carry some adaptive tendencies of perfectionism (Bieling, Israeli, & Antony, 2004), were not predictive of any stress reactivity, selection difficulty or decisional delay indicators. There are ongoing discussions in the literature surrounding the notion that some of the perfectionism dimensions may accompany more or less adaptive tendencies. Some research has suggested that SOP and PS may contain some adaptive aspects, including more balanced thinking, striving for success, and the ability to modify standards to fit situations (Bieling et al., 2004). In the current study, it is possible that SOP or PS on its own did not predict selection difficulty, stress reactivity or decisional delay due to carrying some of these adaptive qualities. It may also be the case that when high personal standards are paired with the critical self-evaluations of other dimensions such as COM, problems arise in terms of more maladaptive features influencing decision-making processes. In other words, SOP and PS on their own may

not carry strong enough maladaptive features and might explain why PS has seemingly adaptive qualities. As SOP and PS were not predictive of any decision-making indicators in the current study, this might suggest that the tendencies associated with striving for achievement and success alone may not impede difficulties making a decision or experiencing greater stress, lending support to the idea that some dimensions may carry adaptive qualities.

Limitations and Future Research

The present study is not without limitations. The primary limitation of this study was the failed manipulation check which emphasizes the importance of evaluating the study design and the manipulation. In terms of task design, it has been suggested that decisions made under risk seemed to be associated with different perfectionism dimensions than decisions in ambiguous conditions (Brand & Altstotter, 2008). Risk tasks have been described as explicit decision-making situations with clear rules, whereas ambiguous tasks have been described by undefined probabilities and outcomes. More specifically, COM, DA, and PS predicted performance on a gambling task involving risk, with COM being the strongest predictor (Brand & Altstotter, 2008). On the contrary, none of the perfectionism variables were linked to performance on the Iowa Gambling Task, which is considered an ambiguous task (Brand & Altstotter, 2008). It was also suggested that those high in COM selected safe alternatives more frequently in order to increase the chances of avoiding negative feedback (Brand & Altstotter-Gleich, 2008). In relation to the current decision-making task, perhaps the task was not explicit enough to be considered high risk, as probabilities and outcomes were not clearly defined. One of the reasons it is hypothesized that the risk manipulation was not effective is due to the idea that all participants were aware they would be receiving a selected reward at the end of the study. Specifically, there was no threat of walking away empty handed, which upon review is plausible

in understanding why participants in the high risk condition may not have found the task more risky than those in the low risk condition. If participants receive an item upon completing the task, the risk is minimal. Even though participants may have missed out on receiving their preferred selection, they were not leaving empty handed. In this case, deciding between the different options may still have been difficult but did not result in taking more time to decide, as most options were favourable. In contrast, if participants actually had the chance of walking away without receiving an item, it is likely the risk would have been much more salient.

Upon further reflection of the decision-making task design, another factor to consider is task difficulty. In addition to a lack of risk, the current task did not have a right, wrong or optimal choice which would have been indicative of performance accuracy on the task. Moreover, instead of focusing solely on decisions involving risk, using varying levels of difficulty may provide insight into the trade-off between task performance and task efficiency. There are not many studies specifically looking at perfectionism and reaction time for decision-making involving risk, but He (2016) has looked at a parallel idea of investigating the trade-off between task performance based on accuracy and task efficiency based on reaction time. Research by He (2016) has looked at perfectionism and decision-making on varying levels of task difficulty and findings demonstrated that those higher in perfectionism have been shown to make less accurate decisions when faced with high difficulty tasks, as compared to making more accurate decisions when faced with medium difficulty tasks. Perfectionism also led to an increase in task avoidance on high difficulty tasks but not on medium difficulty task. It has been suggested that this effect may be driven by dichotomous thinking, through which decision difficulty moderates the role of perfectionism and the tendency to abandon effort when perfection is no longer attainable (Beck & Freeman, 1990; He, 2016).

Looking forward, in relation to the design of the reward decision-making task, modifications to the task might benefit from having varying levels of difficulty on a selection based task in order to view differing effects of perfectionism on accuracy. Investigating response times on these types of tasks may also provide further insight into this relationship and be able to expand on previous research indicating the importance for those higher in perfectionism to be preoccupied with accuracy, although not always taking longer to complete tasks. In addition to the task design, in order to gain a better understanding of the ways in which perfectionism influences selection difficulty and stress reactivity, future research should consider including constructs that measure perceptions of threat, cognitive bias, rumination and anxiety. The inclusion of these constructs may provide valuable insight into the specific mechanisms that underlie the influence of certain characteristics of the perfectionism dimensions that were involved in the decision-making processes from this study, as well as offer further support for the unique relationship between perfectionism and decision-making.

Implications

This study revealed important findings that offer a better understanding of the ways in which decision-making processes are related to perfectionism. Overall, the present study provided preliminary support for the perspective that perfectionism influences difficulty in making decisions as well as the experience of stress when asked to make a decision. This fairly novel area of research holds promise for understanding the underlying characteristics behind coming to a decision and highlights the importance of attending to the process of arriving at a decision rather than simply the final decision alone. Specifically, the findings provide relevant insight into the ways in which perfectionism may impede or facilitate decision-making processes. The present findings outline the importance of considering the unique ways that

central characteristics that accompany perfectionism dimensions, including concerns over mistakes, lack of confidence in ones actions and meeting standards set by external pressures influence outcomes of selection difficulty and stress reactivity. In summary, findings provided preliminary evidence into the specific ways in which perfectionism may impede or facilitate making decisions.

In terms of practical application, these findings may offer insight into which perfectionism characteristics to consider in terms of helping individuals reduce selection difficulty and stress related to making efficient decisions. In real life, choices are dynamic and often changing so it is important to know when to make a decision and the effects of delaying decisions. This type of task did not seem to influence how long it takes individuals to complete a selection task but it did demonstrate that not all individuals adapt equally under pressure. The findings provided information on perfectionism, specifically how COM, DA, and SPP relate to making decisions, which can be useful in understanding how to offer help to individuals who experience negative consequences from struggles in making decisions and feeling stress and strain from daily hassles as a result of perfectionism. By understanding the influences of perfectionism on decision-making, this contributes to the ability to help individuals adapt in a very dynamic world to be able to make efficient and effective decisions. In everyday life, choices are dynamic and often changing so it is important to know when to make a decision and the consequences of delaying decisions. That is, understanding the relative importance of efficiency and accuracy in decision-making processes is crucial to optimizing functioning and performance. By understanding the mechanisms and characteristics of perfectionism dimensions that influence decision-making, one could better help individuals who struggle with the challenges of making decisions. These are important pieces to consider in terms of day to day activities but also in

terms of important life decisions consumers are faced with, such as purchasing gifts, purchasing homes, making investments, deciding which school to attend, and other similarly important decisions. Learning about specific relationships with perfectionism may lead to being able to help individuals make decisions with less stress and difficulty, reducing the hassles and negative consequences to overall health that come along with avoiding decisions.

Conclusion

To conclude, the present study begins to examine the potential influence of perfectionism on indicators of selection difficulty, stress reactivity, and decisional delay involved in decision-making processes. Overall, these findings add to the paucity of research regarding the role of perfectionism in the decision-making process and extend findings by demonstrating that certain characteristics associated with various perfectionism dimensions appear to be important in predicting decision-making outcomes. Specifically, findings from this study highlight the role of the influence of perfectionism dimensions that encompasses threat of failure, concern over mistakes and doubts about actions on difficulty making decisions and experiencing increased stress during a reward based decision-making task. Results from the current study also offer support to the notion that perfectionism dimensions characterized by high personal standards may carry some adaptive features which may buffer against the stress of decision-making. Findings from this study also offer suggestions to help develop a modified selection decision-making task that may be more effective at assessing the influences of perfectionism on decisional delay with specific regard to measuring accuracy and response times. The research provides insight into the types of characteristics and cognitive appraisals to possibly target in order to offer support to individuals who experience negative consequences related to decision-making. Finally, although findings from this study provide a preliminary understanding of the ways in

which perfectionism may impede or facilitate making decisions via influences on selection difficulty, stress reactivity, and decisional delay, it is clear that this remains a novel area of research that warrants further investigation.

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APPENDIX A. Demographic Questions

DEMOGRAPHIC INFORMATION

Please fill out the following information:

Declared or Intended Major: (scale response)

_____Psychology _____Sociology _____English _____History

_____Nursing _____Social Work _____Business _____Other

Program year: (scale response) 1, 2, 3, 4

Full-time/part-time status: (scale response) PT / FT

Age (in years): (fill in the blank) _____

People sometimes identify themselves by **"race"** and/or colour. We should point out that there is no evidence of clear biological distinctions between "racial" groups. From our perspective, such divisions are a question of culture (i.e., learned) and not of biology. Please check the group(s) that you believe best describe the group with which you most identify. Examples of heritage groups are provided.

_____ Chinese (Hong Kong, Tibetan etc.)

_____ Black (African, Caribbean, etc.)

_____ East Asian (Japanese, Korean, Vietnamese, etc.)

_____ South Asian (East Indian, Pakistani, etc.)

_____ White (Eastern European, North American, etc.)

_____ Other (please specify): _____

Were you born in Canada?

_____ Yes _____ No

If you were not born in Canada, please indicate how many years you have been living in Canada? (fill in the blank)

_____

APPENDIX B. Multidimensional Perfectionism Scale

Multidimensional Perfectionism Scale (MPS)

Listed below are a number of statements concerning personal characteristics and traits. Read each item and decide whether you agree or disagree & to what extent.

		Disagree						**Agree**
1.	**When I am working on something, I cannot relax until it is perfect**	1	2	3	4	5	6	7
2.	**I am not likely to criticize someone for giving up too easily**	1	2	3	4	5	6	7
3.	**It is not important that people I am close to are successful**	1	2	3	4	5	6	7
4.	**I seldom criticize my friends for accepting second best**	1	2	3	4	5	6	7
5.	**I find it difficult to meet others' expectations of me**	1	2	3	4	5	6	7
6.	**One of my goals is to be perfect in everything I do**	1	2	3	4	5	6	7
7.	**Everything that others do must be of top-notch quality**	1	2	3	4	5	6	7
8.	**I never aim for perfection on my work**	1	2	3	4	5	6	7
9.	**Those around me readily accept that I can make mistakes too**	1	2	3	4	5	6	7
10.	**It doesn't matter when someone close to me does not do their absolute best**	1	2	3	4	5	6	7
11.	**The better I do, the better I am expected to do**	1	2	3	4	5	6	7
12.	**I seldom feel the need to be perfect**	1	2	3	4	5	6	7
13.	**Anything that I do that is less than excellent will be seen as poor work by those around me**	1	2	3	4	5	6	7
14.	**I strive to be as perfect as I can be**	1	2	3	4	5	6	7
15.	**It is very important that I am perfect in everything I attempt**	1	2	3	4	5	6	7
16.	**I have high expectations for the people who are important to me**	1	2	3	4	5	6	7

17. **I strive to be the best at everything I do**	1	2	3	4	5	6	7
18. **The people around me expect me to succeed at everything I do**	1	2	3	4	5	6	7
19. **I do not have very high standards for those around me**	1	2	3	4	5	6	7
20. **I demand nothing less than perfection of myself**	1	2	3	4	5	6	7
21. **Others will like me even if I don't excel at everything**	1	2	3	4	5	6	7
22. **I can't be bothered with people who won't strive to better themselves**	1	2	3	4	5	6	7
23. **It makes me uneasy to see an error in my work**	1	2	3	4	5	6	7
24. **I do not expect a lot from my friends**	1	2	3	4	5	6	7
25. **Success means that I must work even harder to please others**	1	2	3	4	5	6	7
26. **If I ask someone to do something, I expect it to be done flawlessly**	1	2	3	4	5	6	7
27. **I cannot stand to see people close to me make mistakes**	1	2	3	4	5	6	7
28. **I am perfectionistic in setting my goals**	1	2	3	4	5	6	7
29. **The people who matter to me should never let me down**	1	2	3	4	5	6	7
30. **Others think I am okay, even when I do not succeed**	1	2	3	4	5	6	7
31. **I feel that people are too demanding of me**	1	2	3	4	5	6	7
32. **I must work to my full potential at all times**	1	2	3	4	5	6	7
33. **Although they may not say it, other people get very upset with me when I slip up**	1	2	3	4	5	6	7
34. **I do not have to be the best at whatever I am doing**	1	2	3	4	5	6	7
35. **My family expects me to be perfect**	1	2	3	4	5	6	7
36. **I do not have very high goals for myself**	1	2	3	4	5	6	7

37. **My parent rarely expected me to excel in all aspects of my life**	1	2	3	4	5	6	7
38. **I respect people who are average**	1	2	3	4	5	6	7
39. **People expect nothing less than perfection from me**	1	2	3	4	5	6	7
40. **I set very high standards for myself**	1	2	3	4	5	6	7
41. **People expect more from me than I am capable of giving**	1	2	3	4	5	6	7
42. **I must always be successful at school or work**	1	2	3	4	5	6	7
43. **It does not matter to me when a close friend does not try their hardest**	1	2	3	4	5	6	7
44. **People around me think I am still competent even if I make a mistake**	1	2	3	4	5	6	7
45. **I seldom expect others to excel at whatever they do.**	1	2	3	4	5	6	7

APPENDIX C. Frost Multidimensional Perfectionism Scale

Frost Multidimensional Perfectionism Scale (FMPS)

Please indicate the extent to which you agree with each of the following statements.

		Strongly Disagree				**Strongly Agree**
		1	2	3	4	5
1.	**My parents wanted me to do the best at everything.**					
2.	**Organization is very important to me.**	1	2	3	4	5
3.	**As a child, I was punished for doing things less than perfect.**	1	2	3	4	5
4.	**If I do not set the highest standards for myself, I am likely to end up a second-rate person.**	1	2	3	4	5
5.	**My parents never tried to understand my mistakes.**	1	2	3	4	5
6.	**It is important to me that I am thoroughly competent in everything I do.**	1	2	3	4	5
7.	**I am a neat person.**	1	2	3	4	5
8.	**I try to be an organized person.**	1	2	3	4	5
9.	**If I fail at work/school, I am a failure as a person.**	1	2	3	4	5
10.	**I should be upset if I make a mistake.**	1	2	3	4	5
11.	**My parents set very high standards for me.**	1	2	3	4	5
12.	**I set higher goals than most people.**	1	2	3	4	5
13.	**If someone does a task at work/school better than I, then I feel like I failed the whole task.**	1	2	3	4	5
14.	**If I fail partly, it is as bad as being a complete failure.**	1	2	3	4	5
15.	**Only outstanding performance is good enough in my family.**	1	2	3	4	5
16.	**I am very good at focusing**	1	2	3	4	5

	my efforts on attaining a goal.					
17.	**Even when I do something very carefully, I often feel that it is not quite right.**	1	2	3	4	5
18.	**I hate being less than the best at things.**	1	2	3	4	5
19.	**I have extremely high goals.**	1	2	3	4	5
20.	**My parents have expected excellence from me.**	1	2	3	4	5
21.	**People will probably think less of me if I make a mistake.**	1	2	3	4	5
22.	**I never felt like I could meet my parents' expectations.**	1	2	3	4	5
23.	**If I do not do as well as other people, it means I am an inferior human being.**	1	2	3	4	5
24.	**Other people seem to accept lower standards than I do.**	1	2	3	4	5
25.	**If I do not do well all the time, people will not respect me.**	1	2	3	4	5
26.	**My parents have always had higher expectations for my future than I have.**	1	2	3	4	5
27.	**I try to be a neat person.**	1	2	3	4	5
28.	**I usually have doubts about the simple everyday things I do.**	1	2	3	4	5
29.	**Neatness is very important to me.**	1	2	3	4	5
30.	**I expect higher performance in my daily tasks than most people.**	1	2	3	4	5
31.	**I am an organized person.**	1	2	3	4	5
32.	**I tend to get behind in my work because I repeat things over and over.**	1	2	3	4	5
33.	**It takes me a long time to do something "right".**	1	2	3	4	5
34.	**The fewer mistakes I make, the more people will like me.**	1	2	3	4	5
35.	**I never felt like I could meet my parents' standards.**	1	2	3	4	5

APPENDIX D. Intolerance of Uncertainty Scale

Intolerance of Uncertainty Scale- Short Form

Please select the number that best corresponds to how much you agree with each of the following statements.

		Not at all characteristic of me	A little characteristic of me	Somewhat characteristic of me	Very characteristic of me	Entirely characteristic of me
1.	**Unforeseen events upset me greatly.**	1	2	3	4	5
2.	**It frustrates me not having all the information I need.**	1	2	3	4	5
3.	**Uncertainty keeps me from living a full life.**	1	2	3	4	5
4.	**One should always look ahead so as to avoid surprises.**	1	2	3	4	5
5.	**A small unforeseen event can spoil everything, even with the best of planning.**	1	2	3	4	5
6.	**When it's time to act, uncertainty paralyses me.**	1	2	3	4	5
7.	**When I am uncertain I can't function very well.**	1	2	3	4	5

8.	**I always want to know what the future has in store for me.**	1	2	3	4	5
9.	**I can't stand being taken by surprise.**	1	2	3	4	5
10.	**The smallest doubt can stop me from acting.**	1	2	3	4	5
11.	**I should be able to organize everything in advance.**	1	2	3	4	5
12.	**I must get away from all uncertain situations.**	1	2	3	4	5

APPENDIX E. Indecisiveness Scale

Indecisiveness Scale

Please indicate the extent to which you agree with each of the following statements.

		Strongly Agree				Strongly Disagree
1.	**I try to put off making decisions.**	1	2	3	4	5
2.	**I always know exactly what I want.**	1	2	3	4	5
3.	**I find it easy to make decisions.**	1	2	3	4	5
4.	**I have a hard time planning my free time.**	1	2	3	4	5
5.	**I like to be in a position to make decisions.**	1	2	3	4	5
6.	**Once I make a decision, I feel fairly confident that it is a good one.**	1	2	3	4	5
7.	**When ordering from a menu, I usually it difficult to decide what to get.**	1	2	3	4	5
8.	**I usually make decisions quickly.**	1	2	3	4	5
9.	**Once I make a decision, I stop worrying about it.**	1	2	3	4	5
10.	**I become anxious when making a decision.**	1	2	3	4	5
11.	**I often worry about making the wrong choice.**	1	2	3	4	5
12.	**After I have chosen or decided something, I often believe I've made the wrong choice or decision.**	1	2	3	4	5
13.	**I do not get assignments done on time because I cannot prioritize what is most important.**	1	2	3	4	5
14.	**I have trouble completing assignments because I cannot prioritize what is most important.**					
15.	**It seems that deciding on the most trivial things takes me a long time.**	1	2	3	4	5

Note: Items 2, 3, 5, 6, 8, and 9 are reverse-coded.

APPENDIX F. Ethics Approval

APPROVAL FOR CONDUCTING RESEARCH INVOLVING HUMAN SUBJECTS
Research Ethics Board – Laurentian University

This letter confirms that the research project identified below has successfully passed the ethics review by the Laurentian University Research Ethics Board (REB). Your ethics approval date, other milestone dates, and any special conditions for your project are indicated below.

TYPE OF APPROVAL / New X / Modifications to project / Time extension	
Name of Principal Investigator and school/department	Mallory Calderwood, Psychology, Chantal Arpin-Cribbie, supervisor
Title of Project	The Effects of Perfectionism on Decisional Delay under Conditions of Perceived Risk
REB file number	2014-12-05
Date of original approval of project	Jan 16, 2015
Date of approval of project modifications or extension *(if applicable)*	
Final/Interim report due on: *(You may request an extension)*	Jan, 2016
Conditions placed on project	

During the course of your research, no deviations from, or changes to, the protocol, recruitment or consent forms may be initiated without prior written approval from the REB. If you wish to modify your research project, please refer to the Research Ethics website to complete the appropriate REB form.

All projects must submit a report to REB at least once per year. If involvement with human participants continues for longer than one year (e.g. you have not completed the objectives of the study and have not yet terminated contact with the participants, except for feedback of final results to participants), you must request an extension using the appropriate LU REB form. In all cases, please ensure that your research complies with Tri-Council Policy Statement (TCPS). Also please quote your REB file number on all future correspondence with the REB office.

Congratulations and best wishes in conducting your research.

Rosanna Langer, PHD, Chair, *Laurentian University Research Ethics Board*

APPENDIX G. Consent Form

INFORMED CONSENT FORM

Study Title: The Effects of Personality on Personal Preferences
Investigators: Mallory Calderwood and Dr. Chantal Arpin-Cribbie

This study is intended to provide a better understanding of the relationships between personality, cognitive processes and personal preferences. The study will take approximately 30 minutes and you will be asked to complete a series of questionnaires and a preferences task on a computer. The task is designed to assess how personality affects people's interests. At the end of the study, you will be fully debriefed on the specific hypotheses of the study and you will have the opportunity to ask questions.

There are no inherent risks related to participation in the study; however, some participants may experience slight uneasiness when completing psychological assessments or tasks. Should the desire for support arise, we provide you with contact information for Student Services on the Barrie campus of Georgian College. Student Services is located in room B110 and can be reached by phone at (705)722-1523. Additional information can be located at: http://www.georgianc.on.ca/student-services/career-student-success/. Students on the Sudbury campus can access the Health and Wellness Services located on the 1st floor of the Single Student Residence in room G23 and the toll free telephone number is 1.855.675.1511 ext. 1067.

Your participation in this study is strictly voluntary and your responses in the study are anonymous and confidential. As compensation, if you signed up via SONA, you will receive partial course credit of 0.5% toward the research participation component of the SONA specified course. If you were not recruited via SONA, you will receive a $2 Tim Hortons gift card. Your identity will not in any way be linked to your responses to the study materials. The data collected in this study may be used for publication purposes but will be reported as aggregate data so that individuals could not be identified. Please note that you have the right to discontinue your participation or withdraw your data at any time without penalty by indicating your decision to the researcher. You will still receive your compensation if you choose to withdraw.

If you have any questions about the study, you can contact the researcher, Mallory Calderwood, via email (mcalderwood@laurentian.ca) or the faculty supervisor, Dr. Chantal Arpin-Cribbie, via email (carpincribbie@laurentian.ca) or by phone (1.855.675.1151 ext. 6702). If you have any questions about the ethics of your participation in the study, you may contact the Research Ethics Officer, Laurentian University Research Office, 705.675.1151 ext. 2463 or toll free at 1.800.461.4030 or by email (ethics@laurentian.ca) and the Research Ethics Board Chair at Georgian College, Dr. Richard Rinaldo at 705.728.1968 ext. 5583 (Richard.Rinaldo@GeorgianCollege.ca).

_____
Participant Name (Please Print)

_____ _____

Participant's Signature Date

If you would like to receive an email summary of the results of the study (to be available by November 2015), please provide your email address on this line:

_____

APPENDIX H. Debrief Form

DEBRIEFING FORM

Study Title: The Effects of Personality on Personal Preferences
Investigators: Mallory Calderwood and Dr. Chantal Arpin-Cribbie

The questionnaires you completed at the start of the study assessed perfectionism, indecisiveness, stress reactivity and intolerance of uncertainty.

The main independent variable in the study was the level of perceived risk in the decision-making task. You should note this study used deception. You could not be told about the true purpose of the study in advance as this information would likely have affected your responses. Some participants in the study (in the experimental, high risk condition) were told that the availability of remuneration options was 2 or fewer and that options might become unavailable over time. This was intended to increase the uncertainty experienced by participants when making a decision. Other participants in the study (in the control, low risk condition) were told that the availability of remuneration options was 10 or more and that options might become unavailable over time.

We expect that depending on the level of perfectionism, the conditions of risk to which participants were exposed will influence decision-making processes, specifically, decisional delay. One of the main hypotheses was that participants with higher levels of perfectionism, who were in the high-risk condition, would take the longest to select a remuneration option on the task and experience greater stress reactivity associated with making a decision.

We are hoping that the results of this study will inform current research and knowledge about the mechanisms of perfectionism that influence decisional delay and decision-making involving risk and uncertainty.

Some participants may have experienced slight uneasiness when completing psychological questionnaires or tasks. Should you desire additional support, we are providing you with the contact information for Student Services on the Barrie campus of Georgian College. Student Services is located in room B110 and can be reached by phone at (705) 722-1523. Should you desire additional support on the Sudbury campus, we are providing contact information for Health and Wellness Services on the Sudbury campus located in the student residence complex and can be reached by phone at (705) 675-1151 ext. 1067 or by email (lrivet@laurentian.ca). Additional information can also be located at http://www.georgian.on.ca/student-services/career-student-success/ and at http://laurentian.ca/health-wellness. Students on the Sudbury campus can access the Health and Wellness Services located on the 1st floor of the Single Student Residence in room G23 and the toll free telephone number is 1.855.675.1511 ext. 1067.

If you have any questions about the study, you can contact the researcher, Mallory Calderwood, via email (mcalderwood@laurentian.ca) or the faculty supervisor, Dr. Chantal Arpin-Cribbie via email (carpincribbie@laurentian.ca) or by phone (1.855.675.1151 ext. 6702). If you have any concerns about your participation in the study, you may contact the Research Ethics Officer, Laurentian University Research Office, 705.675.1151 ext. 2436 or toll free at 1.800.461.4030 or by email (ethics@laurentian.ca) and the Research Ethics Board Chair at Georgian College, Dr. Richard Rinaldo at 705.728.1968 ext. 5583 (Richard.Rinaldo@GeorgianCollege.ca).