Decision-Making in Young Adults: Towards a Better Understanding of Individual Differences in Decision-Making Anxiety

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Abstract

The study of individual differences provides insights into how person-specific factors influence decision-making, either before, during or after a decision is made. This dissertation examined a specific individual difference in decision-making: decision-making anxiety. With the adoption of a situation-specific approach, a series of three studies allowed for the conceptual definition of this construct, the development of a measure, and the exploration of its role in the decision-making process. Study 1 focused on the development and validation of the Decision-Making Anxiety Inventory. The results demonstrated that the 8-item scale is a useful measure of decision-making anxiety, a superordinate construct, best understood by the interrelations of its three factors of anxiety, worry, and emotionality. Moreover, this study situated decision-making anxiety alongside existing decision-making and personality constructs. In Study 2, the relationships between decision-making anxiety and objective and perceived decision-making competence, and perceived decision quality were examined. This study also included cross-validation from peers. Findings revealed that anxious decision-makers viewed themselves as poor decision-makers who do not make quality decisions. This perception was not supported by the results from objective measures, nor from peer ratings. In Study 3, the role of decision-making anxiety was explored in a specific decision-making context: job search. Data was gathered at two time points, two months apart. This study investigated whether decision-making anxiety led to poorer job choice outcomes, via its relationship with job search behaviours. Results demonstrated that decision-making anxiety was a significant negative predictor of job search effort and intensity, and the focused, exploratory, and haphazard job search strategies. However, decision-making anxiety did not predict the more distal outcomes. Overall, this dissertation highlights that decision-making anxiety is a relevant individual difference in

decision-making, which appears to influence individuals' perceptions about their decision-making skills, their experience of decision outcomes, and their decision-related behaviours.

Résumé

L'étude des différences individuelles permet de mieux comprendre comment les facteurs personnels influencent la prise de décision, soit avant, pendant ou après la décision. Cette dissertation a examiné une différence individuelle spécifique à la prise de décision: l'anxiété décisionnelle. En adoptant une approche situationnelle, une série de trois études a permis de définir conceptuellement ce construit, de développer une mesure et d'explorer son rôle dans le processus décisionnel. L'étude 1 a porté sur le développement et la validation du Decision-Making Anxiety Inventory. Les résultats ont démontré que l'échelle de 8 items est une mesure utile de l'anxiété décisionnelle. Dans l'étude 2, les relations entre l'anxiété décisionnelle et la compétence décisionnelle objective et perçue, et la qualité de décision perçue ont été examinées. Cette étude comprenait également la perspective des pairs. Les résultats ont révélé que les décideurs anxieux se considéraient comme de mauvais décideurs qui ne prennent pas des bonnes décisions. Cette perception n'était pas soutenue par les résultats de mesures objectives ni par les évaluations de leurs pairs. Dans l'étude 3, le rôle de l'anxiété décisionnelle a été exploré dans un contexte décisionnel spécifique: la recherche d'emploi. Les données ont été recueillies à deux moments, à deux mois d'intervalle. Cette étude a examiné si l'anxiété décisionnelle entraînait des résultats sous-optimaux de choix d'emploi, via sa relation avec les comportements de recherche d'emploi. Les résultats ont démontré que l'anxiété décisionnelle était un prédicteur négatif important de l'effort et de l'intensité de la recherche d'emploi, ainsi que des stratégies de recherche d'emploi. Cependant, l'anxiété décisionnelle n'a pas permis de prédire les résultats plus distaux. Dans l'ensemble, cette dissertation souligne que l'anxiété décisionnelle est une différence individuelle pertinente dans la prise de décision, qui semble influencer les perceptions des individus sur leurs compétences décisionnelles, leurs comportements, et leur expériences.

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Table of Contents

List of Tables

List of Figures

Chapter I. General Introduction: Anxiety in Decision-Making

General Introduction

Decision-making is an inherent part of people's life. Decisions differ not only in their frequency (e.g., what to eat for lunch vs. what date to get married on) but also in their magnitude (e.g., buying a birthday gift vs. buying a house). Decisions also occur in a variety of contexts such as one's personal or work life. Furthermore, decisions could have consequences for only the individual making the decision, or for others involved (e.g., a single person deciding to try a plant-based diet vs. parents deciding to relocate their family to a new city). Accordingly, a decision is defined as choosing an option from a choice set (Maglio & Reich, 2020) such as deciding on a university after having received multiple admission offers. Importantly, making a decision can also lead to subsequent ones, stemming from the initial choice (Maglio & Reich, 2020; Mohammed & Schwall, 2009). For example, deciding on a university major requires future decisions, such as the type, number and time of classes to enroll in each semester, or which section of a specific class to select, to name a few.

Given its applicability to many life domains, decision-making is a broad topic of research for several disciplines such as psychology, management, economics and computer science. Across disciplines, three different factors emerge as integral components of the decision process: the features of the decision itself, situational factors, and individual differences between decision-makers (Appelt et al., 2011). However, despite a substantial amount of research devoted to decision-making, there are two important gaps in the literature. The first gap exists at a macro level, and relates to what parts of the decision process have been most researched. Indeed, as highlighted by Mohammed and Schwall (2009), much research has focused the features of the decision task itself, such as its difficulty, uncertainty, or trade-offs between alternatives. In comparison, much less research has examined the characteristics of the decision-makers

themselves; that is, less work has focused on decision-makers' individual differences. The study of individual differences in decision-making is important because it focuses on how person-specific factors influence decision-making, either before, during, or after a choice is made. As such, not only are individual differences a critical element to consider to fully understand decision-making, but a sustained emphasis on them in the context of decision-making research is long overdue (Mohammed & Schwall, 2009). More than ten years later, this call to action is still relevant, with many authors highlighting continued gaps in the individual differences in decision-making literature (Cheek & Schwartz, 2016; Hamilton et al., 2016; Siebert et al., 2020; Weller et al., 2018).

The second gap in the decision-making literature exists at a micro level and it is *within* the study of individual differences in decision-making. Specifically, decision-making anxiety is a topic that has been overlooked in past research. Indeed, most of the research involving an anxiety component in the decision process focuses on the influence of general trait anxiety on decision-making. Few have looked at a situation-specific type of anxiety that stems directly from being faced with decisions. Just like some decision-makers are more likely to experience decision-making regret (Buchanan et al., 2016) or approach decisions rationally (Hamilton et al., 2016) as compared to other decision-makers, it is possible that decision-makers differ in terms the anxiety they experience when faced with decision. Hence, it might be relevant to investigate decision-making anxiety as an individual difference construct that influences the decision-making process.

Research Questions and Objectives

The goal of this dissertation was to answer the following research questions: i) what is decision-making anxiety? ii) how can it be measured? and iii) what role does it play in the decision-making process? To this end, Chapter 2, consists of a series of three interconnected

studies focused on the development and validation of a measure of decision-making anxiety: the Decision-Making Anxiety Inventory (DMAI), as well as positioning decision-making anxiety in the broader nomological net of decision-making. Chapter 3 presents the results of a study examining the relationship between decision-making anxiety and decision-making competence, as well as perceived decision quality. This study also incorporates both the perspectives of the decision-makers themselves, as well as their peers. Finally, Chapter 4 consists of a final study investigating the relevance of decision-making anxiety in a specific decision-making context: searching for a job. Data for this study was collected at two time points, two months apart. As described in more detail below, the objective of the studies was to investigate decision-making anxiety in the context of emerging adulthood (Arnett, 2000).

Developing an understanding of decision-making anxiety can be accomplished by turning to the existing anxiety and decision-making literatures. Specifically, the subsequent sections focus on anxiety in general, and in relation to stress, as well as anxiety as conceptualized in the current decision-making literature. Then, the construct of decision-making anxiety is developed by following the conceptualization of another existing situation-specific type of anxiety, namely test anxiety (Zeidner, 1998; 2007). In the penultimate section of the introduction, the potential consequences of decision-making anxiety are reviewed. Finally, the context of decision-making in young adults is discussed. Gender differences in anxiety and decision-making constructs are discussed throughout this chapter.

Defining Anxiety

Clinical and Non-clinical Anxiety. First, it is important to examine what differentiates non-clinical anxiety from pathological anxiety, i.e. anxiety disorders. Indeed, anxiety is a common experience (Blakey & Abramowitz, 2020; Öhman, 2008). For instance, recent

prevalence estimates indicate that a third of the world's population will experience symptoms of an anxiety disorder throughout their life (Bandelow & Michaelis, 2015), and in a given year, one in nine people are affected by an anxiety disorder worldwide (Craske & Stein, 2016). There are three main elements that distinguish non-clinical anxiety from clinical anxiety. First, the *Diagnostic and Statistical Manual of Mental Disorders* (5th ed.; *DSM–5*; American Psychiatric Association [APA], 2013) specifies that for an issue to be deemed clinically significant, it must cause substantial distress and/or impairment in functioning. This general criterion, applicable to all mental disorders, delineates non-clinical versus pathological psychological difficulties (when applied in conjunction with the remaining diagnostic criteria for a given disorder). There are two additional factors that characterize clinical anxiety: chronicity and intensity (APA, 2013; Barlow, 2002; Blakey & Abramowitz, 2020; Öhman, 2008). Anxiety becomes problematic when it persists with time, with six months being the diagnostic cutoff between non-clinical and clinical anxiety in the *DSM-5* (APA, 2013). Furthermore, in individuals living with anxiety disorders, their anxiety is usually excessive and beyond what is considered reasonable (APA, 2013). In other words, the clinical experience of anxiety is often intense, produces acute distress, and is disproportionate in relation to the perceived threat. For example, public speaking is an anxiety-provoking situation for many people with and without anxiety disorders. An expected response would be the experience of physical sensations of anxiety (e.g., increased heart rate, sweating, bodily tension) and some worrisome thoughts, but most individuals would still be able to go through with their presentation. An excessive or disproportionate response would be anxiety so intense that the person is completely overwhelmed by the accompanying physical sensations, and the worries about the presentation could lead to missing the meeting to avoid having to speak publicly at all.

The *DSM-5* (APA, 2013) includes five disorders relevant to adults: specific phobia, social anxiety disorder, panic disorder, agoraphobia, and generalized anxiety disorder. Those living with specific phobia experience anxiety in delineated circumstances, in response to specific objects or situations, for example, dogs, heights, or needles. Individuals with social anxiety disorder experience intense anxiety in response to social interactions. In panic disorder, individuals have repeated panic attacks which are intense and uncomfortable, and are accordingly frequently preoccupied with having subsequent attacks. Individuals living with agoraphobia experience anxiety in the context of situations in which they believe escape might be difficult, such as crowds or enclosed places. Finally, individuals with generalized anxiety disorder are excessively preoccupied about various aspects of their life, such as work or daily hassles, and describe their worries as difficult to control. (APA, 2013).

The present thesis focuses on individuals in the general population, who experience anxiety at a non-clinical level. The following section provides an overview of how non-pathological anxiety has been defined and studied over time.

State-Trait Anxiety. In general, anxiety is a complex and multifaceted construct, and it refers broadly to a basic human emotion that signals threat or uncertainty in our environment (Blakey & Abramowitz, 2020; LaBar, 2016; Zeidner, 1998). Barlow (2002) states that it is "best characterized as a future-orientated emotion, characterized by perceptions of uncontrollability and unpredictability over potentially aversive events and a rapid shift in attention to the focus of potentially dangerous events or one's own affective response to these events" (p.104). Furthermore, anxiety has been defined both as a transient state, as well as a stable personality trait. To borrow Spielberger's (1966) classic example, "Mr. Smith is anxious" (p.12) can mean two different things: Mr. Smith is currently experiencing anxiety, or, Mr. Smith has a tendency

to be anxious. Because the statement can vary according to what we imply from it, it is important to differentiate between both trait and state anxiety.

Trait anxiety is a stable individual difference that refers to general anxiety proneness across a wide variety of situations (Spielberger & Vagg, 1995). For example, individuals with low trait anxiety could be described by their partner as calm, having not displayed much anxiety throughout their relationship, whether handling day-to-day tasks, work-life balance or big milestone events. On the other hand, state anxiety refers to the general level of anxiety experienced in a given moment, such as when being late for an important meeting (Spielberger & Vagg, 1995). Supporting this distinction, results from foundational studies by Cattell and Scheier (1958; 1961) found evidence of these two distinct factors, with state anxiety fluctuating over time, and trait anxiety remaining relatively stable (Spielberger, 1966). Furthermore, building on this distinction, Spielberger (1966) provides a model of a state-trait conceptualization of anxiety. To summarize his model, state anxiety is evoked through a chain of events, initiated by external and/or internal stimuli. The amount of state anxiety experienced by a person is influenced by how the stimulus is appraised. Trait anxiety, then, is said to be an individual's tendency to interpret certain types of situations as threatening, and subsequently responding with state anxiety. In other words, the amount of state anxiety experienced in a given situation depends upon the interaction between a person's general anxiety proneness, and the stimulus. Of note, trait anxiety does not lead to an increase in state anxiety for all stimuli, only to particular situations (Spielberger, 1966). This interactional model of anxiety has been studied thoroughly since its introduction in the literature, with its state-trait distinction still representing a widely used conceptualization of anxiety (Endler & Kocovski, 2001; Zeidner, 1998). In sum, anxiety is indeed a multifaceted dimensional construct, which can be seen as a transient state (state

anxiety), a stable personality trait (trait anxiety), or a combination of both, as per Spielberger's (1966) model of state-trait anxiety.

Anxiety and Stress. In addition to understanding the differences between anxious and clinically anxious individuals, it is also essential to understand the relationship between anxiety and a distinct yet related phenomenon, namely stress. Historically, stress has been conceptualized and defined in a multitude of ways: as a stimulus, a response, and an interaction and/or transaction between an individual and their environment (Biggs et al., 2017; Sarason,1984). In general, stress represents a "negative emotional experience accompanied by predictable biochemical, physiological, cognitive, and behavioral changes that are directed either toward altering the stressful event or accommodating to its effects" (Taylor, 2015, p. 113). According to Lazarus and Folkman's (1984) transactional model of stress, there are two important elements to stress: appraisal and coping. Thus, for individuals to experience stress, they must interpret the stressor as challenging, and as being beyond their ability to cope with the stressors' associated demands. Anxiety, on the other hand, is not directly focused on the stressful event. Indeed, anxious individuals shift their attention from the external demands of the event to the uncontrollability of the potentially harmful consequences stemming from this situation, and to their own reactions to these negative outcomes (Barlow, 2002).This shift in focus that occurs in anxious individuals typically leads to a disproportionate response to a given situation (APA, 2013).

Gender Differences in Anxiety. There is a well-established gender difference in the prevalence of anxiety disorders across the world. Indeed, women are twice as likely to report difficulties relating to anxiety (Bandelow & Michaelis, 2015; Craske & Stein, 2016; Grant & Odlaug, 2015), both in community samples (Armstrong & Khawaja, 2002; Stein & Vythilingum,

2015) and clinical samples (APA, 2013). Within each type of anxiety disorder, this difference is maintained, with the female to male ratios being 2.34 for specific phobia, 1.41 for social anxiety disorder, 2.5 for panic disorder, 3.1 for agoraphobia, and 1.8 for generalized anxiety disorder (Bandelow & Domschke, 2015; Grant & Odlaug, 2015). A similar pattern of gender differences has been found in general, non-clinical trait anxiety. Indeed, several studies have found that women typically have higher scores on trait anxiety measures compared to men (Feingold, 1994; McLean & Anderson, 2009; Stake & Eisele, 2010).

The reasons for these gender differences in clinical and non-clinical anxiety remain unclear (Stein & Vythilingum, 2015). Possible psychological explanations have been suggested, namely that men underreport their symptoms because it is less socially acceptable for them to talk about their feelings (Bandelow & Domschke, 2015), and that similarly, women are more open to and aware of their feelings, thus more likely to report on them when asked (Stake & Eisele, 2010). Given the existence of gender differences in anxiety, this issue is revisited in the following sections when reviewing anxiety as it pertains to decision-making.

Conceptualization of Anxiety in Current Decision-Making Research

Having reviewed anxiety broadly, it is important to examine how anxiety has been specifically incorporated in the decision-making literature. Consistent with its conceptualization as both a stable trait and a transient state (Cattell, & Scheier, 1958;1961; Spielberger, 1966; Spielberger & Vagg, 1995; Zeidner, 1998), research on anxiety in the context of decision-making process has mostly focused on three types of studies: i) the role of general trait anxiety on decision-making, ii) the role of incidental state anxiety on decision-making, and iii) anxiety as a decision-making style.

Trait Anxiety. Researchers adopting a trait anxiety perspective have been interested in how an individual's own general propensity to be anxious influences their decision-making process. In studies following this tradition, participants are asked to respond to general anxiety scales, such as the State Trait Anxiety Inventory (STAI; Spielberger et al., 1983), prior to engaging in a decision-making task. Results from these studies demonstrate that trait anxiety relates to decision-making behaviour. For example, high trait anxious individuals have a tendency to gather less information and to decide more quickly in uncertain situations than their low trait anxious counterparts (Bensi & Giusberti, 2007). Similarly, trait anxious individuals seem to prefer options that are low-risk and low-reward, possibly due to their motivation to reduce uncertainty (Raghunathan & Pham, 1999). Further, trait anxiety has been linked to more conservative financial decisions. Specifically, anxious individuals preferred low-risk portfolio and made quick stock decisions regardless of favourable or unfavourable outcomes (Gambetti & Giusberti, 2012).

Studies adopting the trait anxiety perspective have also been conducted with participants denoting a clinical level of anxiety. For example, anxious participants, regardless of the type of anxiety disorder they lived with (either panic disorder or generalized anxiety disorder) made significantly less risky choices than the non-anxious control group (Giorgetta et al., 2012). Further, compared to individuals living with mood disorders and to a non-clinical control group, individuals living with anxiety disorders demonstrated more risk-aversion (Maner et al., 2007). These examples demonstrate that generally anxious individuals have specific risk and certainty preferences, which influence how they make decisions. Of note, there appears to be some confusion in the literature about the definition of anxiety, with authors of a recent meta-analysis highlighting that fear and anxiety are often used interchangeably in risky decision-making

studies (Wake et al., 2020). However, anxiety and fear are distinct constructs, with fear representing an emotional response to present-moment, impending danger (Abramowitz et al., 2019; Barlow, 2002; LaBar, 2016; Öhman, 2008).

Interestingly, while there are gender differences in trait anxiety proneness for both clinical and nonclinical populations (APA, 2013; Armstrong & Khawaja, 2002; Bandelow & Michaelis, 2015; Craske & Stein, 2016; Stein & Vythilingum, 2015), none of the studies described above report examining gender differences in relation to their focal variables. Only Gambetti and Giusberti (2012) formally include gender as a variable of interest in their reported analyses. They found that gender had a significant influence on duration of investments and investment preferences, with women preferring longer term investments, and accounts that deliver interest.

State Anxiety. Another category of studies of anxiety in decision-making evaluates the impact of incidental state anxiety on decision-making. This type of anxiety is distinct from one's overall propensity to be anxious, i.e., trait anxiety (Spielberger, 1966; Zeidner, 1998). Incidental emotions represent feelings experienced during the decision-making process that are not relevant to the decision itself (Lerner et al., 2015). In general, researchers interested in incidental state anxiety will experimentally induce anxiety in their participants and then measure the effect of anxiety on participants' future decisions in a laboratory task. Results from these studies demonstrate that incidental anxiety influences decision-making. For example, in a decision task, individuals in the anxiety-induced condition had a greater tendency to seek out and rely on advice as compared to individuals in the neutral condition (Gino et al., 2012). Furthermore, in a two-part task, participants who were primed to experience higher levels of anxiety did not perform as well in the main decision-making task as their less anxious counterparts, but were no

less accurate in a secondary task (Cumming & Harris, 2001). Interestingly, when participants are aware of the source of their anxiety (i.e. as not stemming from the current decision), the effects of incidental anxiety are eliminated (Yip & Côté, 2013). Similarly to the trait anxiety studies described above, none of these experiments report gender-based analyses regarding levels of state anxiety, with the exception of Gino et al. (2012) who found no main effects or interactions for gender.

These types of studies are interesting and provide important findings on the role of anxiety in decision making. Indeed, they demonstrate that incidental state anxiety appears to have an impact on decision-making. However, the experimental induction of anxiety only provides limited insight into whether, and if so, how, people differ in their proneness to experiencing anxiety due to decisions they face.

Anxiety as a Decision-Making Style. In addition to the trait and state approaches to studying anxiety, two studies (Dewberry et al., 2013; Leykin & Derubeis, 2010) have examined anxiety in the context of decision-making styles. Decision-making style refers to how individuals use habitual patterns to make decisions, such as adopting a rational and systematic approach, following a gut feeling, seeking input from others, avoiding or delaying making a decision as long as possible, and being impulsive (Scott & Bruce, 1995). Some researchers also propose that decision-making styles represent patterns of behaviour used to cope with the various demands of a decision (Mann et al., 1997).

First, Leykin and Derubeis (2010) make reference an anxious decision-making style in the context of the development of the Decision Styles Questionnaire (DSQ). Specifically, their measure combines items from two existing scales, the Flinders Decision Making Questionnaire (FDMQ; Mann, 1982) and the General Decision-Making Style Inventory (GDMS; Scott &

Bruce, 1995), in addition to their own items. Unfortunately, they do not provide more information on what theories guided the development of these new items, and they do not further elaborate on why they introduced the anxious decision style. From reviewing the subscale, it appears that they combined two items from the FDMQ hypervigilance subscale (Mann, 1982), as well as three of their own new items. In the general definition of the hypervigilance style, there is no explicit mention of decision-making anxiety. Instead, it refers to a frantic search to end a dilemma, and a sense of time pressure, impulsivity and need for immediate relief of emotional stress, and when experienced at very high levels, can be related to a "panic-like state" (p. 2, Mann et al., 1997). Of note, the hypervigilant decision-making style is conceptualized as a coping strategy to gain relief from stressful emotional states (Mann et al., 1997). Perhaps the authors see the anxious decision style as an extreme version of the hypervigilance style. However, it is unclear if and how they distinguish this anxious coping style from the experience of anxiety during a decision.

Building upon Leykin and Derubeis' (2010) work, Dewberry et al. (2013) included what they refer to as "decision-related anxiety" in their elaboration of a model of decision styles. In their model, they postulate that anxiety influences other decision styles, specifically, the brooding, maximizing, and avoidance styles. Thus, their research appears to be more in line with the trait approach described previously. To test their model, they measure decision-related anxiety with the DSQ, i.e. the two items from Mann's hypervigilance scale (1982) and the three items from Leykis and Derubeis (2010) for their first study, and for their second study, they created three new items. Like Leykin and Derubeis (2010), Dewberry et al. (2013) provide no information on the origin of the items nor do they define what decision-related anxiety is, how they have conceptualized it, and why it should be measured as a decision-making style.

Despite the well-established linked between anxiety and gender, neither Leykin and Derubeis (2010) nor Dewberry et al. (2013) investigate its relevance to the anxious decision-making style. Overall, the exclusion of gender as a variable of interest in these decision-making studies, highlights once again the sustained lack of attention that individual differences have received in the broader decision-making literature (Cheek & Schwartz, 2016; Hamilton et al., 2016; Mohammed & Schwall, 2009; Siebert et al., 2020; Weller et al., 2018).

Examining Anxiety in Decision-Making from a Different Lens. The existing literature has approached the study of anxiety in decision-making in three ways: from a general trait perspective, from an incidental state perspective, and from a behavioural style perspective. These studies highlight the relevance and importance of anxiety as a variable of interest in the decision-making process. However, what is lacking is research looking at whether or not people experience anxiety directly related to being involved in the decision-making process. As such, it might be relevant to examine anxiety in the decision-making process from a different lens, namely decision-making anxiety as a situation-specific trait. This approach is explored below.

This different approach is supported by the more general perspective on decision-making emotions. Indeed, in reviewing 35 years' worth of research in decision-making emotions, George and Dane (2016) note that a considerable amount of research has focused on integral and incidental emotions, as well as valence (see also Lerner et al., 2015). Integral emotion refers to feelings that are directly tied to the decision itself. For example, choosing to donate a large sum to your Alma Mater because you feel grateful to the institution is an emotion integral to decision-making (Lerner, et. al., 2015). In general, integral emotions have been shown to be beneficial in guiding decisions, as in the previous example, but also can become a source of bias. For example, deciding to drive to a destination instead of flying due to fear, even though there is less

chance of dying in a plane crash than there is dying in a car crash (Lerner et al., 2015). In all, integral emotions provide valuable information on the decision-making process, and have emerged as a major research theme in the literature on emotions and decision-making. Interestingly, much of the research on integral emotions in decision-making has focused on the decision task itself and what emotions it elicits (George and Dane, 2016), highlighting again the need for studies investigating the role of individual differences in decision-making (Cheek & Schwartz, 2016; Hamilton et al., 2016; Mohammed & Schwall, 2009; Siebert et al., 2020; Weller et al., 2018).).

Decision-Making Anxiety as a Situation-Specific Trait

As reviewed above, researchers have investigated how anxiety as a trait, state, or behavioural style influences decisions. What is missing is a focus on the anxiety that stems from decisions themselves. Thus, the present thesis proposes a different approach to the study of anxiety in decision-making, that is, examining decision-making anxiety as a situation-specific trait.

A situation-specific trait represents the stable way in which an individual responds to a particular context (Zeidner, 1998; Zeidner & Matthews, 2018; Ziegler et al., 2019). It corresponds to a lower level of the personality hierarchy, in which broad, general traits are at the highest level, and more specific, contextual traits are nested below them (Wang & Bowling, 2016). Adopting a narrow lens to understand the role of anxiety in the decision-making process is important. Indeed, Beckmann and colleagues (2020) recently highlighted how "situation-specific response variability captures an important part of personality" (p.2). Additionally, over time, personality researchers have emphasized the importance of the interaction between person and situation (Ziegler et al., 2019).

Existing Situation-Specific Anxiety Constructs. Accordingly, there are several situations-specific anxiety constructs that exist in the literature. For example, test anxiety (Spielberger, 1972), interview anxiety (McCarthy & Goffin, 2004), public speaking anxiety (Bippus & Daly, 1999), sport anxiety (Smith et al., 2006) and even sport injury anxiety (Rex & Metzler, 2016), to name a few. The commonality to all these types of anxiety is that they are each contextualized to a specific situation. For instance, public speaking anxiety is experienced when an individual has to speak in front of others, whether during a class presentation, giving a speech at a wedding, or reading a passage in church. When not subjected to public speaking, the individual might otherwise experience low levels of anxiety on a day-to-day basis.

The established gender difference in the experience of clinical and general trait anxiety has also been found in studies on different types of situation-specific anxiety. A recent meta-analyses of 49 studies found that women report higher levels of test anxiety than men (von der Embse et al., 2018). This finding is long-standing in the test anxiety literature (Cassady & Johnson, 2002; Hembree, 1988). Gender differences have also been examined in the context of interview anxiety, as assessed by the Measure of Anxiety in Selection Interviews (MASI; McCarthy & Goffin, 2004). Similarly, women have a tendency to score higher than men on the MASI (Feeney et al., 2015; Feiler & Powell, 2013). Gender differences in sport anxiety have also been reported since the introduction of the popular Sport Anxiety Scale-2 (Smith et al., 2006). One recent example is from Englert and Seiler (2020) found that women reported higher levels of sports anxiety in a volleyball testing situation.

Transactional Process Model of Test Anxiety. As a way to provide structure to the study of decision-making anxiety, it is important to examine how other areas of research have investigated anxiety experienced in specific situations. Given its extensive literature, test anxiety

can provide useful guidance. Numerous researchers have used a narrow approach to study test anxiety by defining, measuring and investigating the anxiety directly stemming from test taking. Test anxiety represents the situation-specific form of general trait anxiety provoked by academic evaluations (Zeidner 1998; 2010). Importantly, test anxiety is "manifested in *any* testing situation" (p. 292; McCarthy & Goffin, 2005). Spielberger and Vagg (1995) proposed a transactional process model of test anxiety, based on earlier work from Lazarus (1966), as well as Spielberger's (1966) previous research on the state-trait anxiety theory, discussed above. This model, which is still widely used (Steinmayr et al., 2018), highlights the importance of the interaction between personality traits and environmental stressors in relation to levels of anxiety in a given evaluative situation (Zeidner, 1998; 2007; 2010). This conceptualization stems from research findings showing that test-anxious students are more prone to higher trait anxiety, and experience higher levels of state anxiety when taking tests (Spielberger, 1980). Further, researchers have differentiated two major components of test anxiety: worry (e.g., cognitions about the test) and emotionality (e.g., affective responses such as bodily sensations; Ringeisen & Buchwald 2010; Spielberger, & Vagg, 1995; Steinmayr et al., 2018). Studies have demonstrated that these two facets are distinct, yet correlated (see Zeidner, 1998, for a review). Several researchers have found that high test-anxious individuals are distracted by their own thoughts in an evaluative situation, which interfere with the task and negatively affects their performance (Bonaccio et al., 2012; Cassady et al., 2019; Cassady & Johnson, 2001; Hembree, 1988; Sarason, 1972; Spielberger et al., 1978; Wine, 1971). In other words, high levels of test anxiety divert an individual's cognitive resources from the task at hand to irrelevant thoughts about themselves related to the evaluative situation. Through his work, Spielberger (1972) has differentiated several key elements and has elaborated a temporal sequence mapping out the dynamic process

of test anxiety. He posits that evaluative stress leads to perceptions of the test anxiety situation as threatening, which then heightens state anxiety – and subsequently worry and emotionality, leading to cognitive reappraisal of the situation, coping behaviours and outcomes.

Strengths of the Situation-Specific Approach. Examining constructs from a situation-specific approach provides several advantages. At a measurement level, much research has demonstrated the utility of specific measures. They have been shown to be beneficial in terms of having lower levels of error variance, as well as increased levels of predictive validity, compared to general measures (Sackett et al., 2017; Schmit et al., 1995; Shaffer & Postlethwaite, 2012; Wang & Bowling, 2016; Wang et al., 2019). For example, one study examined the same personality traits using a general and contextualized (work) measure. Results indicated that the work-specific measure outperformed the general measure in terms of predicting job performance (Bing et al., 2014). A similar study compared four measures of conscientiousness at various degrees of specificity. Results demonstrated that contextualized measures achieved superior predictive validity over a global measure of conscientiousness, in their relationships with grade-point average and student performance (Woo et al., 2015). Accordingly, in their guidelines for research on individual differences and decision-making, Mohammed and Schwall (2009) recommend the use of narrow traits as opposed to broad traits, because they tend to better predict specific decision-making processes.

Additionally, it is possible that context-specific measures allow for more subtle information to be captured by the scale, information which may not be as evident when using measures of general, broad traits. For example, Mahoney and McEvoy (2012) developed a situation-specific measure of intolerance to uncertainty on the basis that general intolerance to uncertainty might not fully reflect how individuals feel about specific situations that provoke

distress. Similarly, Cassady et al. (2019) note that the role of cognitive test anxiety on performance "is highly specific and may not generalize to non-testing contexts (e.g., writing papers, homework, class activities)" (p. 3). In other words, it is possible that general measures might miss some information that is specific or unique to certain situations.

Formal Definition of Decision-Making Anxiety. Like test anxiety and these other situation-specific anxiety constructs, decision-making anxiety arises from a specific situation (decision-making) and can vary from one individual to another (personality trait). In other words, the decision-making situation acts as a cue that leads to the evocation of anxiety (Barlow, 2002). Thus, it is an individual difference that occurs in the decision-making process, such that two people faced with the same decision may experience different levels of decision-making anxiety. Further, two people faced with different decisions can experience the same amount of decision-making anxiety. In short, because it is a subjective response to decisions, the extent to which an individual experiences decision-specific anxiety can vary from one person to another.

Applying the transactional process model to decision-making, the worry component relates to the cognitions associated with the decision itself, whereas the emotionality component refers to the physiological reactions stemming from being involved in a decision-making situation. Thus, decision-making anxiety contextualizes the components of worry and emotionality to the specific situation of decision-making, much like test anxiety contextualizes them to the situation of a test. In summary, adopting a situation-specific trait perspective to define decision-making anxiety is consistent with previous conceptualizations of contextualized anxiety constructs. It can also provide useful information from a measurement standpoint.

Examining the Potential Consequences of Decision-Making Anxiety

Part of understanding decision-making anxiety and its role in the decision-making process consists of examining its potential consequences. Indeed, after reviewing the current state of individual differences in the decision-making literature, Mohammed and Scwhall (2009) recommend that future studies examining the influence of person-specific traits on decisions include indicators beyond the actual choice made by the individual. They highlight that "individual differences are reflected not only in the decision act itself, but even more so in the broader predecisional processes and postdecisional outcomes involved in making decisions" (Mohammed & Schwall, 2009, p.290).

Decision-Making Competence and Perceived Decision Quality. A long-standing debate in the study of decision-making has been finding the answers to the questions, what constitutes a "good" decision, and how do we measure it? Keren and Bruine de Bruin (2003) highlight that while there is no universal definition of decision quality, researchers have traditionally measured the quality of decisions in two ways, either by examining the process relating to how an individual arrives at the decision, or by looking at the outcomes as a result of the decision. Most studies have focused on the process, with the underlying assumption that if individuals possess good decision skills, they will achieve good decision outcomes. Despite the fact that they are understudied, the actual outcomes of a decision remain relevant to the study of the quality of decisions.

Consequently, the question of the possible influence of decision-making anxiety on decision-making competence and perceived decision quality arises, as they are both variables used in assessing "good" decision-making. Decision-making competence is a construct believed to represent an individual's overall decision-making ability, as indicated by core decision skills

(Bruine de Bruin et al., 2007; Parker & Fischhoff, 2005). It was introduced by Parker and Fischhoff (2005) in order to help shift the focus of decision research to individual differences, and most importantly, to provide a valid measure for researchers wishing to investigate decision-making competence. Given its emphasis on skills, decision-making competence relates to the decision-making process itself as opposed to decision outcomes, and as such, it is a process indicator. Researchers have studied the relationship between decision-making competence and other variables, such as leadership (Carnevale et al., 2011), memory (Del Missier, et al., 2013), and personality traits (Weller et al., 2018).

Beyond decision-making competence, another relevant outcome indicator in decision-making is perceived decision quality. Perceived decision quality represents an individual's self-reported general tendency to make good decisions, by experiencing good decision outcomes (Wood & Highhouse, 2014). Decision-making quality refers to what happens after a decision is made, as opposed to how the decision is made. Within the context of individual differences in decision-making, this variable has been used to test the predictive validity of decision-making styles (Curseu & Schruijer, 2012; Wood & Highhouse, 2014).

Job Search Processes and Outcomes. A context in which both predecisional processes and postdecisional outcomes both occur quite naturally is the job search and job choice process. It provides a rich environment to explore how an individual's propensity to experience decision-making anxiety might interfere with decision-making. In general, "career choices can be thought of as a series of decisions" (Bonaccio et al., 2014, p.239). Certainly, there are many events that precede the final decision of accepting a job offer, and many of these choices are related to how we engage in the job search process. For example, some of these decisions start in the earlier stages of the process, such as deciding on the criteria for the job you are seeking (e.g., job type,

pay, location) and choosing to apply to a prospective employer (Harold et al., 2013; Wanberg et al., 2012). Indeed, Mohammed and Schwall (2009) note the importance of the initial stages of the decision-making process, highlighting that it is in fact considered by many to be the most crucial phase, given the implications it has on the remaining elements.

Furthermore, to most job seekers, the series of decisions involved in the job search and job choice context feels important. Indeed, in a qualitative study, job decisions were associated with "substantial thought and worry" (Wanberg et al., 2012, p.909), and described by the authors as "heart-wrenching" (Wanberg et al., 2012, p.909). In essence, many decisions made along the journey are personally significant to job seekers, and thus, the job search and job choice process is likely to be anxiety-provoking for some individuals.

As previously mentioned, anxiety has been broadly conceptualized as a response to uncertainty (Blakey & Abramowitz, 2020; LaBar, 2016; Zeidner, 1998). Without a doubt, looking for employment is a context that is ripe for uncertainty, given the many factors involved. The complex nature of job search and job choice is thus quite pertinent to examining individual differences in decision-making anxiety. Indeed, as a situation-specific trait, decision-making anxiety represents the interaction between a personality trait and environmental stressors in a given situation. Because job choice involves many decisions, it is an interesting environment to study decision-making anxiety, and to determine if, and how, decision-making anxiety helps provide insights into the job search and choice process. It also represents a context in which both predecisional processes and postdecisional outcomes can be assessed, making it an ideal setting to implement Mohammed and Schwall's (2009) recommendations for individual differences research. More specifically, the job search process provides information on indicators occurring the early stages of a decision, such as the way job seekers approach their job search, in addition

to several indicators occurring at the end of the process, namely the number of job offers they received, their employment status, and their satisfaction with the decisions they made.

Decision-Making Anxiety in Young Adults

When examining the potential influence of decision-making anxiety in the decision-making process, it is important to consider the developmental context of the decision-makers. Twenty years ago, Arnett (2000) introduced a new conceptualization of the transitional developmental period between adolescence and adulthood, calling this period "emerging adulthood." He argued that individuals who have graduated high school (typically around age 18) but have not yet reached the major commitments of adulthood (roughly age 25, but is sometimes extended to age 29) are in a distinct developmental life stage with its own distinguishing features (Arnett, 2015). He explains that this stage is not the extension of adolescence, because emerging adults typically have more freedom and independence than adolescents. It is also not early adulthood, because most emerging adults have not yet hit the milestones that are typically associated with adulthood, such as getting married, having children, or having the financial stability to buy home. It is thus its own distinct period.

Based on his research on individuals in this life stage, Arnett (2015) proposes five distinctive features of emerging adulthood: identity explorations, instability, self-focus, feeling in-between, and possibilities/optimism. First, emerging adults seek to discover who they are in many different life domains, such as career, love, and lifestyle. This quest is often filled with different experiments in order to define and clarify their identity. Peer influence, a phenomenon often studied in adolescents, remains relevant once individuals become emerging adults, potentially having an impact on these experiments. Indeed, Riedijk and Harakeh (2018) examined emerging adults' potential for being influenced by their peers' risky decision-making.

They found that participants made riskier decisions when exposed to an unfamiliar peer who made risky choices, compared to those who were exposed to an unfamiliar peer that did not make risky decisions. Furthermore, identity explorations relating to work, school and career goals are also particularly salient for emerging adults. For example, in their qualitative study on career anxiety in college students, Pisarik et al. (2017) found that emerging adults struggle with existential concerns about their careers. A recurring worry for a number of these college students is not only procuring employment, but also cultivating a meaningful and fulfilling career. Some participants also expressed feeling pressure with regards to their career decisions, from family, school and themselves.

Second, emerging adulthood is characterized by instability, in several areas such as romantic relationships, work, and place of residence. Emerging adults try to have a plan to move them from adolescence into adulthood, but during this time period, their plan is often revised a number of times. For example, in terms of career aspirations, 83.5% of Canadians change career paths at least once between the ages of 18 and 25 years old, with 13.3% still undecided at age 25 (Statistics Canada, 2015). Moreover, the average post-secondary drop-out rate is 21% (Statistics Canada, 2008), showing that a number of Canadian emerging adults change their minds about their educational plans. Of note, indecision about career choices can be developmentally appropriate. In their 3-year longitudinal study on career indecision, Guay et al. (2006) found evidence of three distinct groups amongst Quebec college students: decided (48% of their sample), developmentally undecided (27% of their sample), and chronically undecided (25% of their sample). Career indecision is seen as developmentally normal when it stems from a lack of knowledge about one's identity, and the working world. Thus, students in this category typically encounter a decrease in their level of career indecision as they gain more life and work

experience over time. On the other hand, career indecision is seen as chronic and problematic when this added knowledge does not change one's inability to make career-related decisions (Guay et al., 2006).

The third feature of emerging adulthood is self-focus. Indeed, emerging adults rarely have to be accountable to others on a daily basis; most of them have moved out of their parents' homes and only need to answer to themselves for daily decisions such as what to eat, when/if they should do their chores, etc. Arnett (2015) emphasizes that emerging adults are faced with a multitude of decisions such as switching majors or changing roommates. Most of these decisions are made with limited influence and input from others. Parents and friends can be consulted when making these decisions, but often, the emerging adult decides on their own, according to their needs and wants.

The fourth characteristic of emerging adulthood is feeling in-between, that is, being in a transition between adolescence and adulthood. Arnett (2015) describes three criteria, seemingly universal amongst American and non-American emerging adults, that signal that one has reached adulthood: accepting responsibility for oneself, making independent decisions, and being financially independent. Thus, until people have met all three of these benchmarks, they often feel "in-between." Moreover, the process of reaching adulthood by satisfying these criteria is often gradual instead of sudden. In the beginning, it is quite possible that individuals feel like they do not meet any criterion. At a later point in this stage, however, one might be only missing financial independence, which could take years to meet after satisfying the first two criteria. This would be the case of someone pursuing a lengthy graduate degree.

The final feature of emerging adulthood is possibilities/optimism. Indeed, this life stage is filled with an exceptional amount of possibilities and opportunities to guide, construct and mold

the future. As such, emerging adults imagine fulfilling lives filled with satisfying relationships and careers, overlooking the gloomier scenarios that some of them will likely encounter, such as disappointing jobs and even bad divorces (Arnett, 2015).

Of note, while the term "emerging adulthood" is relatively new (c.f., Arnett, 2000), research on emerging adulthood has been growing steadily. For example, a recent review paper examined over 1300 empirical studies on the topic, published between 2000 and 2015 (Swanson, 2016). The dimensions of emerging adulthood are typically assessed using the Inventory of the Dimensions of Emerging Adulthood (IDEA; Reifman et al;., 2007), which has been validated in several other languages, including Spanish (Sanchez-Queija et al., 2020) and Greek (Leontopoulou et al., 2016). Studies have supported the relevance of the different features of emerging adulthood across socio-economical differences (e.g., Arnett, 2016; Landberg et al., 2019). Furthermore, researchers have highlighted the need for cross-cultural studies (Syed & Mitchell, 2013), a call that has been gaining traction in recent years (e.g., Landberg et al., 2018; Neblett et al., 2019). Regarding gender differences, recent studies have replicated the anxiety-gender link in this distinct developmental period, for college students specifically, in American and Chinese samples. Indeed, female college students reported higher levels of general anxiety than their male counterparts, a pattern that emerged in both cultures (Conley et al., 2020; Gao et al., 2020). Overall, Arnett (2016) highlights that this rich developmental period can be characterized as "one stage, many paths" (p. 234), in which common experiences are grounded in relevant socio-cultural contexts, like other life stages.

In sum, emerging adulthood can indeed be considered a distinctive life stage that has its own representative features. As such, it is important to recognize the context in which these individuals evolve in, and subsequently, make decisions in.

Dissertation Overview

The focus of the present dissertation is to explore the nature of decision-making anxiety. Research on both trait and state anxiety, as well as anxiety as a decision-making style, and their role in decision-making contribute to our understanding of how individual differences can influence the decision process. However, their focus is unidirectional inasmuch as researchers look at the impact of general anxiety on decision-making. What is lacking is research looking at whether or not people experience anxiety directly related to being involved in the decision-making process. In order to do so, it is important to have a contextualized measure that captures the anxiety people experience in a decision-making situation, just like it has been done for other "anxieties." For example, the test anxiety literature has developed measures that capture the experience of test takers who are anxious when faced with a test (Zeidner, 1998) and similarly, the interview anxiety literature has a scale that assesses individual differences in the experience of anxiety in the context of selection interviews (McCarthy & Goffin, 2004). In other words, developing a measure that is able to reflect the anxiety provoked by the decision itself and the characteristics of the decision-maker (i.e. a situation-specific trait) is essential in order to fill the gaps in the existing decision-making literature, both at the macro level with regards to individual differences (Cheek & Schwartz, 2016; Hamilton et al., 2016; Mohammed & Schwall, 2009; Siebert et al., 2020; Weller et al., 2018) and at the micro level, within the individual differences in decision-making literature.

To this end, the next chapter consists of the development and validation of a situation-specific measure of anxiety, the Decision-Making Anxiety Inventory (DMAI), through three studies examining content validity, reliability, factor structure, and finally, convergent and discriminant validity. The third chapter then examines how decision-making anxiety relates to

the decision-making process. Specifically, the role of decision-making anxiety is investigated in relation to decision-making competence, a process indicator, and perceived decision quality, an outcome indicator. The fourth chapter consists of examining the relevance of decision-making anxiety in a specific decision-making context: searching for a job. This third study focuses on how individual differences in decision-making anxiety influences behaviours in the job search. It also examines the relationship between decision-making anxiety and important outcomes of job choice, both objective and subjective to the decision-maker's experience. Finally, the fifth chapter is the general discussion, in which the main objectives and findings of the present dissertation are reviewed, followed by an examination of its contributions, implications, as well as limitations, terminating with suggestions for future avenues of research.

Chapter II. Development and Validation of the Decision-Making Anxiety Inventory (Studies 1a, 1b, 1c)

Introduction

People are faced with decisions in a wide variety of life contexts, and these decisions are characterized by varying frequency and importance. Decisions occur when people have to choose between a set of options, and this often leads to subsequent decisions (Maglio & Reich, 2020). Because of the wide-reaching implications of decision-making processes and outcomes, it is not surprising that this topic has been studied by several disciplines ranging from psychology to computer science. Within this multidisciplinary literature, individual differences between decision-makers has been less studied compared to the other components of the decision-making process. Accordingly, researchers have called for a more sustained emphasis on individual differences (Mohammed & Schwall, 2009), a call that has yet to be answered satisfactorily (Cheek & Schwartz, 2016; Hamilton et al., 2016; Siebert et al., 2020; Weller et al., 2018). The study of individual differences in decision-making is important as it informs us on how person-specific factors influence decision-making, either before, during, or after a choice is made.

Of note, in the individual differences literature, most of the research involving anxiety in the decision process focuses on general anxiety (e.g., trait anxiety) on decision-making. Few have looked at a more situation-specific type of anxiety that stems directly from being faced with a decision. As a result, there exists no formal definition of decision-making anxiety and, consequently, there is no instrument available to measure it. Investigating the role of anxiety in decision-making with a contextualized measure is valuable. Personality research over time has highlighted the interaction between person and situation (Ziegler et al., 2019), as well as intra-individual variability across different contexts (Beckmann et al., 2020). The stable way in which individuals respond to a given context is described as a situation-specific trait (Zeidner, 1998; Zeidner & Matthews, 2018; Ziegler et al., 2019). Thus, context-specific measurement can help

capture more subtle information about an individual which may or may not be evident when using measures of broad traits. This is consistent with the hierarchical nature of personality, with general traits on the higher echelon, and more specific traits below it (Wang & Bowling, 2016).

Given the limited information available in the decision-making literature, other areas of research on contextualized anxiety were considered when examining potential theoretical underpinnings of decision-making anxiety. In particular, researchers have used a narrow approach to study anxiety by defining, measuring and investigating the anxiety directly stemming from test taking. Test anxiety is defined as a situation-specific form of general trait anxiety that occurs in the context of academic evaluations (Zeidner 1998; 2010). Similarly, decision-making anxiety can be conceptualized as stemming from a specific situation (decision-making) and varies from one individual to another (personality trait). Thus, it is an individual difference within the decision-making process: two individuals facing the same decision could experience different levels of decision-making anxiety. Or, two people faced with different decisions (e.g., choosing where to go on vacation vs. choosing which car to buy) could experience the same amount of decision-making anxiety. In other words, the extent to which an individual experiences decision-specific anxiety can vary from one person to another.

Spielberger and Vagg (1995) have proposed a transactional process model for test anxiety, which is still widely used more than twenty years later (Steinmayr et al., 2018). This model has two components: worry and emotionality. Worry refers to the cognitions that the individual has about the test and/or themselves, such as “I find myself thinking about how much brighter the other students are than I am” (item from the Test Anxiety Scale (TAS); Sarason, 1978) or “Thinking about the grade I may get in a course interferes with my studying and my performance on tests” (item from the TAS; Sarason, 1978). Emotionality relates to the affective

responses associated with being in a test situation, such as bodily sensations (Spielberger, & Vagg, 1995). For example, “while taking an important examination, I perspire a great deal” (item from the TAS; Sarason, 1978). Research has demonstrated that while these two components are distinct, they are correlated (Zeidner, 1998). Borrowing from that model, for decision-making anxiety, the worry component would relate to the cognitions associated with the decision, and the emotionality component would refer to the physiological reactions that stem from being involved in the decision-making process. For example, for an individual faced with deciding on what college to attend, if experiencing high levels of decision-making anxiety, their thoughts would likely be centered around the decision, such as “this is overwhelming!” or “why is this choice so hard to make?,” all the while noticing their strong physiological responses, like a racing heart. In sum, like test anxiety contextualizes worry and emotionality to the situation of a test or an examination, decision-making anxiety contextualizes worry and emotionality to the situation of making a decision.

In terms of measurement, situation-specific anxiety instruments are typically used in two ways (Zeidner, 1998; Zeidner, 2007). Most researchers are interested in an individual’s usual tendency to experience anxiety during any type of the anxiety-provoking situation in question. For example, some items from the Reactions to Tests (Sarason, 1984) scale include “I feel jittery before tests” and “my mind wanders during tests.” Similarly, some items from the Measure of Anxiety in Selection Interviews (MASI; McCarthy & Goffin, 2004) are “I become so apprehensive in job interviews that I am unable to express my thoughts clearly” and “In job interviews, I get very nervous about whether my performance is good enough.” This approach is also commonly adopted by researchers studying decision-making constructs (e.g., decision-making styles (Hamilton et al., 2016; Scott & Bruce, 1995), regret (Schwartz et al., 2002)). On

the other hand, some researchers prefer to cue participants to a particular type of testing situation. For example, in a study of students' perceptions on national tests, Eklöf and Nyroos (2013) instructed participants to answer test anxiety items about the specific test they had just taken. Similarly, Schneider et al. (2019) adapted the MASI to cue respondents to answer about the interview they had just attended.

Study Objectives

The primary goal of Study 1 was to develop a contextualized measure of anxiety, specific to decision-making: the Decision-Making Anxiety Inventory (DMAI). A situation-specific approach is useful as it encompasses the interaction between the individual and the situation, in this case, a decision. To date, decision-making studies have examined anxiety as a trait, a state, or a behavioural style. The development of the DMAI would allow to shift to focus towards the type of situation-specific anxiety that stems from the decision itself.

The study was divided in two phases. Phase 1 comprised the initial scale development and refinement (Study 1a and 1b). Specifically, the preliminary scale's and individual items' psychometric properties, including content validity, were examined (Study 1a). In light of these results, a reduced version of the DMAI (Study 1b) was administered to a second sample to re-examine the initial factor structure of the scale, before proceeding to further refinement and validation. Phase 2 consisted of the scale validation, wherein psychometric properties of the final version of the DMAI, as well as convergent and discriminant validity were examined (Study 1c).

Scale Development Process

Scale development and validation was guided by best practice recommendations in industrial-organisational psychology (Hinkin, 1998; Hinkin et al., 1997), as well as general psychological assessment methodology (Clark & Watson, 1995; 2019; Crocker and Algina,

2006). The first step in developing the DMAI was item generation. A deductive approach as opposed to an inductive approach (Hinkin, 1998) was chosen for two reasons. First, the initial idea for this project stemmed from an understanding of the current landscape of individual differences in decision-making. Second, the working definition of decision-making anxiety was based on theoretical foundations of similar existing constructs in the broader anxiety literature, namely test anxiety (Zeidner, 1998; 2010). Specifically, two subject matter experts[1] generated items individually and independently, based on our knowledge of anxiety, decision-making, and existing test anxiety measures. Initially, the total amount of items generated was 49. After combining items and discarding similarly worded ones, the item pool was reduced to 40. The preliminary item pool was purposely broad (Clark and Watson, 1995), and accordingly, all items generated were retained, including those that did not quite fit the theoretical assumption of the two components of decision-making anxiety, worry and emotionality. The items were also reviewed for content validity. In accordance with the standard situation-specific and decision-making individual differences measurement practices (e.g., Hamilton et al., 2016; McCarthy & Goffin, 2004), all items referenced decisions in general. Finally, a 7-point Likert-type response scale was chosen, to allow for enough variance for subsequent scale and item analyses and to include a mid-point (Hinkin et al., 1997; Hinkin, 1998).

The second step in the development of the DMAI consisted of administering the questionnaire to several participant samples and to proceed with item reduction. Accordingly, Study 1a consisted of the administration of the initial 40-item version to a first sample, allowing for the reduction of the initial item pool through statistical analyses, namely, internal consistency assessment and Exploratory Factor Analysis. Though the use of a second sample, Study 1b

[1] The subject matter experts were A. Girard and S. Bonaccio.

consisted of a second-round of item reduction, once again by examining its internal consistency and factor structure.

The final step in the scale development process, described below, consisted of ascertaining the DMAI's structure through a Confirmatory Factor Analysis, as well as examining convergent and discriminant validity. For this purpose, several different questionnaires were administered alongside the final 8-item DMAI in Study 1c, using a third sample.

Decision-Making Anxiety as a Superordinate Construct

Based on the theoretical underpinnings of decision-making anxiety, and given the parallels to test anxiety, it was expected at least two factors of worry and emotionality would be recovered. However, it was anticipated that conceptualizing decision-making anxiety as a second-order factor might be a more parsimonious representation of the construct. A superordinate construct consists of a main concept being represented by the interrelations of its dimensions (Wright et al., 2012). From a measurement standpoint, this would mean that it would be appropriate to measure an individual's level of decision-making anxiety using their overall DMAI score as opposed to their scores on each of the factors. Relating back to test anxiety, it is also used in its broader form (e.g., in the Test Anxiety Inventory (TAI; Spielberger, 1980). Accordingly, it was expected that conceptualizing decision-making anxiety in a similar manner would be appropriate, leading to the following hypothesis:

Hypothesis 1. Decision-making anxiety is best represented as a superordinate construct, representing a higher-order factor.

Decision-Making Individual Differences

To examine the construct validity of the DMAI, several relevant variables from the decision-making and personality psychology literatures were identified. The goal of convergent

validity is to investigate the extent to which decision-making anxiety correlates with other theoretically similar constructs, while the goal of discriminant validity is to determine the extent to which decision-making anxiety does not relate to dissimilar constructs (Hinkin, 1998). Below is an overview of these constructs.

First, individuals tend to approach decisions with specific behavioral styles, or habitual responses. In particular, five styles have been identified: rational, intuitive, avoidant, dependent and spontaneous (Scott & Bruce, 1995). Of these decision-making styles, it was expected that the DMAI would positively correlate with measures of avoidant and dependent styles. The avoidant style refers to making efforts to avoid the act of deciding (Scott & Bruce, 1995). A common reaction to an anxious state is avoidance (Abramowitz et al., 2019; Blakey & Abramowitz, 2020; Carver et al., 1989; Suls & Fletcher, 1985) therefore, someone who experiences high levels of decision-making anxiety might also avoid making decisions. Furthermore, Thunholm (2008) examined decision-making styles and stress response, by looking at the differences in cortisol levels in military officers making decisions in two military situations. The results showed a significant positive correlation between avoidant decision-making style and cortisol levels, as well as a higher baseline cortisol level in avoidant decision-makers, compared to those who use other styles. In general, cortisol levels have been found to be higher in individuals living with anxiety disorders, as well as a tendency to trend upwards in people who have recovered from anxiety disorders (Vreeburg et al., 2010). More recently, avoidant decision-making style was shown to be positively correlated with a measure of perceived stress (Bavolar & Bacikova-Sleskova, 2018).

The dependent style consists of consulting others to get guidance and recommendations on how to decide (Scott & Bruce, 1995). Seeking help from others is a coping strategy (Carver et

al., 1989) that could also be used to reduce anxiety, thus, making it probable that individuals who score high on decision-making anxiety would also endorse using this decision-making style. On the other hand, stress and the dependent decision-making style are unrelated (Thunholm, 2008; Bavolar & Bacikova-Sleskova, 2018). Despite these findings, at a conceptual level, the coping response described above to reduce anxiety seems applicable to the decision-making situation. It is possible that general markers of stress included in these studies are not picking up on a possible relationship between a more specific stress-related construct such as decision-making anxiety and this particular decision-making style.

Based on the aforementioned studies, avoidant and dependent decision-making styles were expected to demonstrate convergent validity with decision-making anxiety. However, it was anticipated that they would be distinct as they have different areas of focus. Whereas decision-making styles are concerned with how an individual acts when making-decisions, decision-making anxiety is focused on the experience of being faced with a decision. Indeed, decision-making styles, as they capture the behavioural aspect of decision-making, do not take into account the cognitive and emotional aspects of anxiety that may stem from being involved in the decision-making process.

Another decision-making variable of interest was regret. Regret has been conceptualized as the emotion experienced when upon the realization current outcomes could have been better had one made different decisions (Zeelenberg & Pieters, 2007; Zeelenberg, 2018). Previous research has shown that individuals can experience regret about the decision process, and about future decisions (Zeelenberg & Pieters, 2007; Zeelenberg, 2018). It was expected that regret would be positively correlated with decision-making anxiety because past regrets can guide future decisions, and it can also lead to rumination (Zeelenberg & Pieters, 2007). In other words,

individuals who are prone to experience regret think about their past mistakes when making decisions. It is likely, then, that these individuals also experience decision-making anxiety when making a choice. However, research has also shown that regret is a distinct reaction, separate from other negative emotions (Zeelenberg & Pieters, 2007). This is also apparent when examining the items of the Regret Scale (Schwartz et al., 2002). The content of these items is focused on whether the individual has a tendency to look back on their decisions and examine other alternatives after a choice has been made. On the other hand, decision-making anxiety focuses specifically on the experience of the decision-maker *during* the decision itself. Thus, while it was anticipated that regret proneness was likely to converge with decision-making anxiety, it was also expected it to be nonredundant, as they are conceptually different.

Finally, it was expected that decision-making anxiety would be positively correlated with indecisiveness. Indecisiveness refers to an individual's tendency to postpone decision-making (Frost & Shows, 1993), and trait anxiety is a strong correlate of this construct (Germeijs & Veschueren, 2011). As such, indecisiveness would likely correlate positively with decision-making anxiety. While both are examples of situation-specific traits, decision-making anxiety and indecisiveness are distinct constructs. As discussed above, decision-making anxiety refers to the experience of an individual while they are making a choice, whereas indecisiveness encompasses other aspects that are beyond the theorized scope of decision-making anxiety, such as behaviour (e.g., "I try to put off making decisions" item from the Indecisiveness Scale (IS)) and emotion experienced after the decision (e.g., "Once I make a decision, I feel fairly confident that it is a good one " IS; Rassin et al., 2007; Frost & Shows, 1993). As such, they are expected to be nonredundant, given theses conceptual differences.

Regarding discriminant validity, it was expected that the following decision-making styles would be unrelated to decision-making anxiety: rational, intuitive and spontaneous. The rational style consists of thoroughly seeking and assessing alternative choices in a logical manner, while the intuitive style refers to an individual's tendency to trust their gut feelings, and finally, the spontaneous style corresponds to an individual's effort to make decisions as quickly as possible (Scott & Bruce, 1995). Relationships between these styles and trait anxiety have not yet been investigated; however, previous studies offer some guidance.

For the rational decision-making style, the evidence is mixed. In Thunholm's (2008) study, no significant correlation was found between increased cortisol levels and the rational decision-making style. A more recent study examining the correlates of a rational decision style also found no evidence of a relationship between this style and neuroticism (Hamilton et al., 2016). This finding is interesting because of the well-established relationship between anxiety and neuroticism (Bienvenu et al., 2004; Kotov et al., 2010). On the other hand, Bavolar and Bacikova-Sleskova (2018) found a significant negative relationship between a measure of perceived stress and the rational decision-making style.

The literature is also mixed with regards to the relationship between the intuitive decision-making style and anxiety-related constructs. This style appears to have the same pattern of evidence as the rational style described above. Indeed, results do not support a relationship between the intuitive decision-making style and cortisol levels (Thunholm, 2008), nor between this style and neuroticism (Hamilton et al., 2016). However, there is evidence of a significant negative relationship between intuitive style and perceived stress (Bavolar & Bacikova-Sleskova, 2018).

As for the spontaneous style, results are conclusive. All three previous studies examined above have not found a relationship between this style and anxiety-related constructs (Bavolar & Bacikova-Sleskova, 2018; Hamilton et al., 2016; Thunholm, 2008).

In all, it was not expected that there would be a relationship between the rational, intuitive and spontaneous decision-making styles and decision-making anxiety, thereby showing discriminant validity.

Personality Variables

To further investigate the DMAI's convergent and discriminant validity, as well as to continue to grow decision-making anxiety's nomological net, some personality variables expected to relate to this new construct, but not be redundant with it, were included. In their article on scale development, Carlson and Herdman (2012) argue that in order to conclude that two scales are measuring the same construct, they should, at minimum, be correlated at $r = .85$. In other words, measures correlating at values below $r = .85$ can be considered distinct and non-redundant. First, it was anticipated that decision-making anxiety would be positively correlated with, yet distinct, from trait anxiety. Because decision-making anxiety is a situation-specific individual difference, it is likely that it represents a contextualized form of a general tendency to experience anxiety (i.e. trait anxiety). Given this close relationship, it was expected that the magnitude of the correlation would be large, but still not exceeding $r = .85$, thereby supporting the expectation that the DMAI measure is non-redundant with general trait anxiety. Furthermore, it was expected that these two variables would be distinct, because trait anxiety only takes into account one's general tendency to feel anxious (i.e. the trait perspective). It is missing the interaction of the person and the specific situation of decision-making. Previous research on

other situation-specific anxieties such as Test Anxiety (Zeidner, 1998) and Interview Anxiety (McCarthy & Goffin, 2004) demonstrate the importance of measuring this interaction.

The Big 5 personality traits were also included to investigate their relationships with decision-making anxiety. In terms of convergent validity, it was expected that decision-making anxiety would be positively correlated with neuroticism. Research has established a strong link between neuroticism and general anxiety (Bienvenu et al., 2004; Kotov et al., 2010), and even between neuroticism and test anxiety (Moutafi et al., 2006). Thus, it was expected that neuroticism would be correlated with decision-making anxiety. It was also expected that neuroticism and decision-making anxiety, though correlated, would be distinct from one another. Indeed, while there is overlap between the two constructs, neuroticism refers to a more generalized tendency to experience negative emotions, not just anxiety, while decision-making anxiety represents a situation-specific individual difference. Supporting this contention, Moutafi and colleagues (2006) report a moderate positive correlation between neuroticism and test anxiety (r = .34). Consequently, it was expected that neuroticism's relationship to decision-making anxiety would be similar (e.g., moderate), confirming that they are indeed two distinct constructs.

The remining Big 5 traits of agreeableness, openness, extraversion and conscientiousness were expected to be unrelated to decision-making anxiety, thereby showing discriminant validity. A meta-analysis found that agreeableness and openness did not correlate with anxiety disorders (Kotov et al., 2010). Thus, it is unlikely that decision-making anxiety, a situation-specific personality trait that may or may not be experienced at a clinical level of intensity, would be related to these two traits. Given the absence of any explicit social component to decision-making anxiety, it was not expected it to correlate in any way with extraversion.

Finally, with regards to conscientiousness, while there is some evidence that people who are affected by anxiety disorders are low on conscientiousness (Kotov et al., 2010), it is not clear if this same link would be found in non-clinical samples. Given this, it was expected that conscientiousness would likely be unrelated to decision-making anxiety.

Items From the Decision Styles Questionnaire

As discussed in the introduction, there exists an anxious decision-making style subscale of the Decision Styles Questionnaire (DSQ; Dewberry et al., 2013). The theoretical background for the elaboration of this subscale is unclear, possibly due to the fact that anxiety and decision-making were not the exclusive focus of these studies. In examining the items, some convergence was expected with the DMAI. However, it was anticipated that they would be non-redundant because it appears that the measures are not measuring the same constructs. Specifically, the items included in Leykin and Derubeis's (2010) DSQ, and some, originally developed by Mann (1982) as the *hypervigilance* style (rather than decision-making anxiety), refer to time pressure (items 2 and 5) and anticipated regret (items 3 and 4). Only one item appears to be related specifically to decision-making anxiety (item 1). However, this item could also be problematic in that it includes an adjective ("I feel *very* anxious when I need to make a decision"; emphasis added), which could impact how respondents use the response scale. Moreover, the items developed by Dewberry and colleagues (2013) all seem to measure tension (e.g., "I can feel myself getting tense when I have to take decisions"). In short, some convergence between the anxious subscale of the DSQ and decision-making anxiety was expected. However, both measures do not appear to be measuring the same underlying construct, and thus, they would be non-redundant.

In summary, to investigate convergent and discriminant validity of the DMAI, it was hypothesized that:

Hypothesis 2. Decision-making anxiety is positively related to the following variables: (a) avoidant and (b) dependent decision-making styles, (c) regret, (d) indecisiveness, (e) trait anxiety, (f) neuroticism, and (g) the anxious subscale of the Decision Styles Questionnaire.

Hypothesis 3. Decision-making anxiety is unrelated to the following variables: (a) rational, (b) intuitive and (c) spontaneous decision-making styles, (d) openness, (e) agreeableness, (f) extraversion, and (g) conscientiousness.

These hypotheses were tested in Study 1c.

Gender

Gender was also included in the present study to investigate its potential relationship with decision-making anxiety. In reviewing the existing literature, the evidence is mixed as to whether or not there exists a relationship between these two variables. In terms of anxiety proneness, the literature demonstrates gender differences in both clinical and nonclinical populations (APA, 2013; Armstrong & Khawaja, 2002; Stein & Vythilingum 2015). Across the lifespan, the prevalence rates of anxiety disorders are higher amongst women, roughly double than what is reported for men (Grant & Odlaug, 2015). However, in the decision-making literature, the influence of gender differences has not been studied as extensively. Indeed, this lack of attention to gender as a variable of interest seems to be related to an overarching lack of focus on individual differences in decision-making (Cheek & Schwartz, 2016; Hamilton et al., 2016; Mohammed & Schwall, 2009; Siebert et al., 2020; Weller et al., 2018). Even within the portion of the decision-making literature focused on individual differences, analyses based on gender

differences are rarely reported. As a result, there is limited insight on the influence of gender in decision-making.

Soane and Nicholson (2008) briefly describe 10 studies that showed an influence of gender on various decision-making contexts most of which are of little relevance to decision-making anxiety (e.g., forecasting, decisions regarding technology adoption, ethical decision-making). One study is worth mentioning given that its context (uncertainty) could be informative for decision-making anxiety. Washburn et al. (2005) found that in an uncertain decision task, women responded more adaptively than men, that is, they sought more information when facing uncertainty, rather than guessing. In contrast, other studies have found an absence of gender differences for certain decision-making variables, such as regret proneness (Schwartz et al., 2002); decision-making styles (Hamilton et al., 2016; Loo, 2000), and career decision-making difficulties (Levin et al., 2020). Taken together, these results indicate that there may or may not be a gender difference in decision-making anxiety. Thus, it was difficult to formally hypothesize whether there would be a significant relationship between the two variables. Still, gender was included in order to explore its relationship decision-making anxiety.

Method for Study 1a: Content Development of the DMAI

Participants

Participants were sought via the University of Ottawa School of Psychology's Integrated System for Participation in Research (ISPR). They were enrolled in an introductory psychology course and received 1% course credit in exchange for their participation. In total, 872 participants completed the questionnaire. After cleaning the data as described in detail below, the final sample on which the analyses were carried out is 698. Participants were predominantly

female (85.8%) and aged 18 to 20 years old (69.9%; *M* = 19.25, *SD* = 3.15). Demographic information on all Study 1 samples is available for reference in Table 2.1.

Table 2.1

Summary of Gender and Age Demographics for all Study Samples

	N	Gender Distribution	Mean Age	Age *SD*
Sample 1a	698	85.8% female	19.41	3.15
Sample 1b	323	68.8% female	19.86	4.08
Sample 1c	341	80.1% female	18.89	1.61

Procedure

Participants were administered the questionnaire electronically, through the online research participation portal.

Measures

Socio-demographic Questionnaire. Through the online participant pool, participants answered a socio-demographic questionnaire that included questions on age and gender, as well as year of study.

Decision-Making Anxiety. The 40-item preliminary version of the Decision-Making Anxiety Inventory was administered to participants, using a 7-point response scale ranging from 1 (Strongly Disagree) to 7 (Strongly Agree). The 40 items are presented in Appendix A.

Careless Response Item. A careless response item was included in order to detect participants who were answering questions with insufficient care and attention. This is a notable concern when data is obtained in the context of mandatory participation, like in exchange for a course credit (Meade and Craig, 2012). Furthermore, it is of particular interest during scale development, given that "random responses constitute error variance, which attenuates correlations, reduces internal consistency reliability estimates, and potentially results in

erroneous factor analytic results." (p.438, Meade & Craig, 2012). Instructed response items are recommended as a means to identify careless responders (Meade & Craig, 2012). To this end, the item "Respond with 'Strongly Disagree' for this question" was added randomly near the middle of the questionnaire.

Results for Study 1a

Data Cleaning

The data was screened and cleaned prior to conducting the psychometric analyses. The initial sample was first screened for careless responders. All participants who did not answer 'Strongly Disagree' (the instructed choice) were removed. This represented 104 participants, or roughly 12% of the sample, which is in the typical range for samples of undergraduate student participants (Meade & Craig, 2012). Then, the 45 participants who had missing data were removed. The scale development nature of the study suggests deletion over other possible strategies such as data imputation (Tabachnick & Fidell, 2013).

The remaining sample of 723 participants was then screened for outliers pertaining to study duration, which is automatically recorded by the online platform used to administer the questionnaire. Only participants with times that were within one standard deviation of the mean duration time were retained, eliminating14 participants. Finally, all participants with low variance between responses (<0.5) were removed. Specifically, 11 participants were deleted based on this final screening. After these steps, the overall sample consisted of 698 participants.

Before conducting further analyses, the sample was randomly split into two: one half was used for internal consistency analyses and the other for factor analysis.

Internal Consistency Assessment

The first half of the sample (*N*=346) was used to conduct reliability analyses. Cronbach's alpha for the 40-item scale was .960, which is considered very high and well above the commonly accepted rule of thumb for new scales (>.70; Hinkin, 1998). No items were deleted based on the alpha-if-deleted values as they ranged from .958 to .962. Moreover, eight items had values lower than the recommended cutoff of .4 (Clark & Watson, 1995; 2019; Hinkin, 1998), and consequently were removed. Item means, standard deviations, and item-total correlations are presented in Table 2.2.

Table 2.2

Item Means, Standard Deviations, Item-Total Correlations and Pattern Matrix for Study 1a

				Factors					
Items	*M*	*SD*	Item-total *r*	1	2	3	4	5	6
7. I feel anxious when I'm faced with a decision.	4.80	1.52	.79	.783					
17. I feel nervous when I'm faced with a decision.	4.82	1.44	.81	.759					
30. I am anxious when I'm faced with a decision.	4.80	1.60	.79	.734					
31. I worry when I'm faced with a decision.	4.80	1.49	.78	.639					
3. I feel calm when I'm faced with a decision. (R)	3.03	1.44	.64	.623					
33. My heart races when I'm faced with a decision.	4.08	1.55	.65	.592					.309
37. I get really stressed out when I'm faced with a decision.	4.77	1.59	.79	.564					
5. I feel tense when I'm faced with a decision.	4.63	1.49	.75	.522					
6. The thought of having to make a decision makes me anxious.	4.41	1.64	.78	.522					
32. My stomach is often in knots when I'm faced with a decision.	4.10	1.69	.67	.506					.312
9. I feel uneasy when I'm faced with a decision.	4.47	1.47	.76	.502					
4. I feel overwhelmed when I'm faced with a decision.	4.58	1.57	.80	.501					
36. Even small decisions make me anxious.	3.63	1.88	.69	.456					
13. I feel uncomfortable when I'm faced with a decision.	4.22	1.51	.73	.403					
8. I have trouble sleeping when I'm faced with a decision.	4.31	1.77	.56	.367					
20. When I'm faced with a decision, I wish someone could choose for me.	4.46	1.82	.62		-.924				
2. When I'm faced with a decision, I wish the decision could be done for me.	4.49	1.85	.77		-.841				
35. I often find myself unable to decide between two options.	5.03	1.48	.69		-.368			-.471	
1. I often don't know what option to choose when I'm faced with a decision.	4.76	1.53	.69		-.301			-.387	
18. I worry about not picking the right option when I'm faced with a decision.	5.59	1.21	.60			.670			
38. When I make decisions, the thought "what happens if I am wrong" enters my mind.	5.67	1.19	.57			.651			
14. I'm afraid to make the wrong choice when I'm faced with a decision.	5.67	1.19	.60			.648			
28. I put a lot of pressure on myself for making the right decision.	5.69	1.21	.61			.640			
19. I feel like I have to make the perfect choice when I'm faced with a decision.	5.48	1.42	.45			.533			
21. When I'm faced with a decision, I need to know every possible outcome before picking an option.	5.56	1.32	.41			.516			
39. I often worry about making the wrong decision	5.46	1.41	.58			.487			
23. I think about all the past mistakes I've made when I'm faced with a decision.	4.69	1.69	.44			.471			
29. When I'm faced with a decision, I'm afraid others will disapprove of my choices.	4.91	1.60	.51			.448			

22. I don't worry about picking the best option when I'm faced with a decision (R).	2.52	1.46	.22			.365			
34. I find it hard to concentrate when I'm faced with a decision.	4.32	1.66	.69				.791		
24. I can't seem to focus when I'm faced with a decision.	4.03	1.63	.70				.696		
12. I feel preoccupied when I'm faced with a decision.	4.42	1.50	.48				.326		
16. When I'm faced with a decision, I have trouble picking an option.	5.08	1.41	.67					-.498	
10. I get nauseated when I'm faced with a decision.	2.87	1.66	.59						.616
40. Having to make decisions paralyzes me with fear.	2.80	1.58	.64						.488
15. My mind goes blank when I'm faced with a decision.	3.26	1.59	.55						.391
11. When I'm faced with a decision, I try to avoid thinking about it.	3.49	1.68	.49						
25. When I'm faced with a decision, I try to get it over with as soon as possible.	4.11	1.60	.10						
26. I try to think of something else when I'm faced with a decision.	3.39	1.59	.46						
27. I struggle with all the different options when I'm faced with a decision.	5.01	1.40	.71						
Percentage of Variance Explained				42.63	5.63	4.94	3.18	2.68	2.52

Note. $N = 352$.

Exploratory Factor Analysis

An Exploratory Factor Analysis (EFA) was conducted on the second half of the sample, consisting of 352 participants. Of note, the recommended number of participants for EFA is from 5 to 10 participants per item (Tabachnick & Fidell, 2013). The present split sample used for this type of analysis fits in this range (N = 352, 8.8 participants/item). As the data was relatively normally distributed, Maximum Likelihood was the chosen method for factor extraction. Based on the scree plot, there was evidence of one strong factor, with an eigenvalue of 17.05, accounting for 42.63% of the variance. A substantial drop between eigenvalues was observed, pointing to a natural breaking point after one factor. Five additional factors were extracted with eigenvalues greater than 1 (2.25, 1.97, 1.27, 1.07, and 1.01), for a cumulative 61.57% of variance explained. The five factors beyond the main first factor extracted contained exclusively items that cross-loaded more strongly on the first factor. These items demonstrated cross-loadings greater than or equal to .30 and these 13 cross-loading items were identified for possible removal. Four additional items with factor loadings below .40 were also identified. Of note, these 17 items included seven of the eight items flagged as problematic based on their inter-item correlations.

Following an OBLIMIN rotation (see Table 2.2), it was clear that certain items formed factors that were reflective of constructs beyond decision-making anxiety (which was captured in Factor 1). Factor 2 represented wanting to delegate the decision to others. Factor 3 contained items that focused on making the "right" or perfect choice, and the consequences of making the wrong one, rather than the anxiety strictly related to the act of decision-making itself. Factors 4 and 5 represented avoiding making the decision and indecisiveness, respectively.

The pattern of evidence found via the EFA led to retention of the items that loaded on the first rotated factor. Based on two different samples, using reliability estimates and exploratory factor analyses, twenty-one items were identified as problematic and were removed from the scale. Thus, the reduced version of the DMAI, administered in Study 1b, contained 19 items. These changes are detailed in Table A.1 in Appendix A.

Method for Study 1b: Further Item Reduction

Participants

Participants were recruited through the same online participant pool as previously referenced. No participants from Study 1a was included in Study 1b. In total, 462 participants completed the questionnaire. Participants were predominantly female (68.8%), aged 18 to 20 years old (77.4%; mean age = 19.86, *SD* = 4.08). After cleaning the data, the final sample on which the analyses were carried out was 323.

Procedure

Participants were administered the questionnaire electronically, through the online research participation portal.

Measures

Socio-demographic Questionnaire. The same questionnaire as Study 1a was used.

Decision-making Anxiety. Participants responded to the 19-item reduced-version of the DMAI.

Careless Response Item. Two careless response items (Meade & Craig, 2012) were included, instructing participants to answer “disagree” for the first one, and “extremely” for the second one. A second careless response item was added because the DMAI was administered alongside other measures that are not relevant to the current study. Thus the questionnaire

package was long enough to include a second item, as per Meade and Craig's (2012) recommendations.

Results for Study 1b

Data Cleaning

The data was screened and cleaned prior to conducting the psychometric analyses, following the same strategies outlined in Study 1a. First, participants who did not answer the instructed choices were removed. This represented 115 participants, or roughly 25% of the sample. Then, the seven participants who had missing data in their responses to the DMAI were removed. The remaining sample of 340 participants was then screened for outliers pertaining to study duration as in Study 1a; 17 participants were eliminated on this ground. Finally, the data was visually examined for response patterns that were unlikely, as per Cortina (2002). No such patterns were identified. After these steps, the overall sample consisted of 323 participants.

Internal Consistency Assessment

Cronbach's alpha for the reduced 19-item DMAI was .947. The alpha-if-deleted values were also examined. No items were removed based on this information, as they ranged from .942 to .948. Item means, standard deviations, and item-total correlations are included in Table 2.3.

Table 2.3

Item Means, Standard Deviations, Item-Total Correlations and Pattern Matrix for Study 1b

Items	*M*	*SD*	Item-total *r*	Factors 1	2	3
5. I feel anxious when I'm faced with a decision.	4.03	1.54	.82	1.009		
12. I am anxious when I'm faced with a decision.	3.97	1.52	.83	.905		
4. The thought of having to make a decision makes me anxious.	3.98	1.56	.77	.868		
6. I feel uneasy when I'm faced with a decision.	3.77	1.52	.78	.832		
10. I feel nervous when I'm faced with a decision.	4.24	1.49	.79	.809		
13. I worry when I'm faced with a decision.	4.24	1.49	.78	.765		
1. I feel calm when I'm faced with a decision. (R)	3.66	1.50	.69	.687		
2. I feel overwhelmed when I'm faced with a decision.	3.98	1.55	.74	.683		
3. I feel tense when I'm faced with a decision.	4.13	1.44	.70	.642		
18. I get really stressed out when I'm faced with a decision.	3.65	1.65	.79	.591		
9. I feel uncomfortable when I'm faced with a decision.	3.65	1.44	.62	.546		
17. Even small decisions make me anxious.	2.62	1.51	.68	.417		
8. I feel preoccupied when I'm faced with a decision.	3.86	1.55	.50	.329	.370	
16. I find it hard to concentrate when I'm faced with a decision.	3.70	1.54	.62		.819	
11. I can't seem to focus when I'm faced with a decision.	3.43	1.51	.56		.708	
7. I get nauseated when I'm faced with a decision.	2.18	1.25	.50			.787
14. My stomach is often in knots when I'm faced with a decision.	3.05	1.60	.65			.656
19. Having to make decisions paralyzes me with fear.	1.88	1.17	.53			.625
15. My heart races when I'm faced with a decision.	3.46	1.62	.57			.526
Percentage of Variance Explained				52.41	7.22	6.48

Note. $N = 323$.

Exploratory Factor Analysis

The same EFA with Maximum Likelihood conducted in Study 1a was replicated on this sample. From the Scree plot, there was still evidence of one strong factor, with an eigenvalue of 9.96. This factor accounted for 52.40% of the variance. As in Study 1a, a substantial drop in eigenvalues between factors was observed. In this case, two additional factors were extracted with eigenvalues greater than 1 (1.32 and 1.23), for a cumulative 66.10% of variance explained.

To help with interpretation of factors, the OBLIMIN rotation was used (see Table 2.3). Based on the rotation, the three factors obtained appear to reflect themes of anxiety, cognitive interference and bodily tension. The first factor measures the anxious state stemming from the decision-making situation, in other words, situation-specific anxiety. Further, consistent with the test anxiety literature situation (Ringeisen & Buchwald 2010; Spielberger & Vagg, 1995; Steinmayr et al., 2018; Zeidner, 1998; 2010), the remaining factors demonstrate the presence of worry (or cognitive interference) and emotionality (or bodily tension). The items that fit this three-factor structure, and had loadings above the recommended .40 cutoff were retained. Thus, 18 items, with 12 loading onto Factor 1, 2 items onto Factor 2 and 4 items onto Factor 3 remained.

In examining each remaining item, the scale was further reduced to a final version of 8 total items, with 3 items for Factors 1 (anxiety) and 3 (bodily tension), and 2 items for Factor 2 (cognitive interference). Item 19 (“having to make decisions paralyzes me with fear”), which loaded onto the bodily tension factor, was removed based on the lack of clarity in the wording of the item. Firstly, it is not clear if feeling paralyzed refers to cognitive and/or a bodily response. Secondly, while strongly correlated and often used interchangeably, fear and anxiety are distinct constructs (Öhman, 2008). Then, 9 items loading onto the anxiety factor were eliminated, based

on redundancy, item wording, and weaker factor loadings. The final version of the Decision-Making Anxiety Inventory is presented in Table 2.5 below.

Method for Study 1c: Convergent and Discriminant Validity

Participants

In total, 491 participants were recruited for this study, through the online participant pool used in Studies 1a and b. No participants from Studies 1a and 1b were included in this sample. After data cleaning (described below), the final sample contained 341 participants, who were predominantly female (80.1%), Caucasian (59.7%), and aged 18 to 19 years old (64.5%; M = 18.89, SD = 1.61).

Procedure

Participants responded to the study measures following the same procedure as Study 1a and 1b. These measures are included in Appendix A.

Measures

Socio-demographic Questionnaire. The same questionnaire as Study 1a and 1b was used.

Careless Response Item. The same two careless response items (Meade & Craig, 2012) from Study 1b were included in this study.

Decision-Making Anxiety. The final version of the Decision-Making Anxiety Inventory containing 8 items was administered to participants, using a 7-point response scale ranging from 1 (Strongly Disagree) to 7 (Strongly Agree). Cronbach's Alpha for this and every other measure are included in Table 2.4.

Decision-Making Style. Avoidant, dependent, rational, intuitive and spontaneous decision-making styles were measured by the General Decision-Making Style questionnaire

(GDMS; Scott & Bruce, 1995). These five styles were assessed through 25 items, 5 per subscale, each rated on a 5-point Likert-type scale, ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). Sample items include "I make decisions in a logical and systematic way" (rational style), "When making decisions, I rely upon my instincts" (intuitive style), "I often need the assistance of other people when making important decisions" (dependent style), "I often procrastinate when it comes to making important decisions" (avoidant style), and "I generally make snap decisions" (spontaneous style).

Regret. Regret was measured using Schwartz and colleagues' (2002) regret scale. It contains five items (e.g., "Whenever I make a choice, I'm curious about what would have happened if I had chosen differently), answered on a 7-point scale ranging from 1 (Strongly Disagree) to 7 (Strongly Agree).

Indecisiveness. Indecisiveness was measured using the 11-item the Indecisiveness Scale (IS; Rassin et al., 2007). Items are answered on a 5-point scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). "I often worry about making the wrong decision" and "Once I make a decision, I feel fairly confident that it is a good one" are examples of items.

Trait Anxiety. Trait anxiety was measured using the State Trait Anxiety Inventory, Form Y-2 (Spielberger et al., 1983). This scale is used in most studies investigating the relationship between anxiety and decision-making (e.g., Bensi & Giusberti, 2007; Raghunathan & Pham, 1999; Gambetti & Giusberti, 2012). It contains 20 items on a 4-point Likert-type scale, ranging from 1 (Almost Never) to 4 (Almost Always). Example of trait anxiety items are "I feel like a failure" and "I worry too much over something that really doesn't matter."

Personality. The Big-5 personality traits were measured using the Mini-IPIP (Donnellan et al., 2006), a shortened version of the 50-item International Personality Item Pool developed by

Goldberg (1999). Each subscale contains 4 items. Respondents were asked to rate how accurate statements are, on a 5-point scale ranging from 1 (Very Inaccurate) to 5 (Very Accurate). Sample items include "get upset easily" (neuroticism), "get chores done right away" (conscientiousness), "am the life of the party" (extraversion), "sympathize with others' feelings" (agreeableness), and "have a vivid imagination" (openness). It is worth noting that while the Cronbach's Alpha for conscientiousness, neuroticism and openness scales are lower than .70, they are consistent with Donnellan et al.'s (2006, Studies 1&2) findings.

Results for Study 1c

Data Cleaning

The data was screened and cleaned prior to conducting the analyses, in the same manner as Study 1a and 1b. Eighty-one participants, representing approximately 16% of the initial sample were removed because they were identified as careless responders. Furthermore, 39 participants were excluded due to missing data, and 12 were eliminated due to the time they took to answer the questionnaire. Given the focus a young adult population any participant over the age of 25 (N = 12) were removed. Finally, no participants were excluded due to unlikely response patterns. The final sample size after data cleaning and screening was 341.

DMAI Internal Consistency Assessment

The 8-item DMAI had a Cronbach's alpha of .89. The alpha-if-deleted values ranged from .86 to .88, indicating that there are no problematic items affecting reliability. Finally, the reliability estimates for each factor were satisfactory (Anxiety α = .83, Worry α = .85, and Emotionality α = .77). Descriptive statistics for the DMAI are presented in Table 2.4.

Table 2.4

Descriptive Statistics and Correlations Results

Variable	*M*	*SD*	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. DM Anxiety	4.02	1.16	*(.88)*														
2. Regret	4.95	1.09	.44***	*(.79)*													
3. Indecisiveness	36.97	7.41	.69***	.53***	*(.88)*												
4. Avoidant DM style	3.11	0.95	.53***	.41***	.64***	*(.88)*											
5. Dependent DM style	3.92	0.67	.42***	.30***	.48***	.36***	*(.77)*										
6. Rational DM style	3.80	0.53	-.14**	.01	-.20***	-.37***	-.05	*(.73)*									
7. Intuitive DM style	3.66	0.57	.04	-.07	-.10	.00	.08	-.19***	*(.77)*								
8.Spontaneous DM style	2.82	0.72	.05	.04	-.09	.24***	-.02	-.48***	.34***	*(.79)*							
9. Trait anxiety	47.71	10.64	.57***	.52***	.62***	.51***	.33***	-.18***	.00	.10	*(.93)*						
10.Neuroticism	12.43	3.14	.44***	.32***	.39***	.27***	.29***	-.12*	.09	.15**	.65***	*(.57)*					
11. Agreeableness	15.71	3.07	.13*	.01	.12*	.00	.15**	.01	.18***	-.02	-.07	-.03	*(.76)*				
12. Openness	14.95	2.96	-.06	-.03	-.09	-.07	-.22***	.10	.03	.01	-.08	.04	.27***	*(.68)*			
13.Extraversion	11.66	3.98	-.21***	-.17**	-.24***	-.13*	-.05	-.10	.12*	.12*	-.32***	-.09	.26***	.08	*(.82)*		
14.Conscientious-ness	13.93	3.03	-.18***	-.09	-.25***	-.40***	-.12*	.42***	-.01	-.23***	-.24***	-.14*	.02	.06	-.01	*(.63)*	
15. Anxious subscale DSQ	3.47	0.82	.78***	.57***	.81***	.55***	.52***	-.05	.02	-.03	.64***	.43***	.10	-.10	-.19***	-.11*	*(.91)*

Note. N = 341; *p < .05; **p < .01; ***p < .001; DM= Decision-making; DSQ = Decision Styles Questionnaire. Values in italics on the diagonal represent Cronbach Alphas.

Confirmatory Factor Analysis

A hierarchical CFA through AMOS (Arbuckle, 2015) allowed to test whether DMAI was best represented as a second-order factor model, as opposed to a first-order model with inter-related dimensions. Following recommendations outlined in Wright et al. (2012) and Graham (2006), the three dimensions of anxiety, worry, and emotionality accurately reflect Decision-Making Anxiety as a higher-order construct. The results are presented in Table 2.5.

The procedure consisted of comparing five models sequentially. To begin, a first-order factor baseline model was specified in order to test the DMAI's multidimensionality. This initial step tests the hypothesis that one first-order factor accounts for the variance amongst all 8 indicators. This hypothesis was not supported due to poor fit ($\chi^2 = 250.87$, $df = 20$; $\chi^2/df = 12.54$; RMSEA = .18; CFI = .84; TLI = .77), demonstrating that all indicators are not loading onto one single factor. Then, a second model was specified, with multiple first-order factors representing the three dimensions of the DMAI. Results for this second model demonstrate a better fit than the baseline, unidimensional model ($\chi^2 = 88.72$, $df = 17$; $\chi^2/df = 5.22$; $\Delta\chi^2(3) = 162.15$, $p < .001$ RMSEA = .11; CFI = .95; TLI = .92). These results show that a multidimensional model with three correlated first-order factors is more appropriate than a unidimensional model with a single first-order factor. These results are also consistent with the three-factor structure identified in the EFA completed in Study 1b.

Following Edwards' (2001) recommendation, three additional models were fit. The third model in this stepped approach is the parallel model. It is the most restrictive, as it assumes that each indicator is equivalent to each other, by constraining the loadings and residual variances of the dimensions as equal (Graham, 2006; Wright et al., 2012). Results show that the parallel model demonstrated an adequate fit, better than the model previously specified in step 2. ($\chi^2 =$

125.60, $df = 21$; $\chi^2/df = 5.98$; $\Delta\chi^2(4) = 36.88$, $p < .001$; RMSEA = .12; CFI = .93; TLI = .90).

The fourth model, the tau equivalent model, is less restrictive than the previous one, as the residual variances of the three dimensions are free to vary (Graham, 2006; Wright et al., 2012). This model is also commonly used to investigate the internal consistency of the second-order factor (Graham, 2006). Results indicated good fit ($\chi^2 = 91.85$, $df = 19$; $\chi^2/df = 4.83$; $\Delta\chi^2(2) = 33.75$, $p < .001$; RMSEA = .11; CFI = .95; TLI = .92), showing that the data fits this model better than the parallel model from the previous step. The final model specified was the congeneric model, which is the least restrictive of the three, as loading and variance constraints are removed (Graham, 2006; Wright et al., 2012). The congeneric model demonstrated adequate fit ($\chi^2 = 88.72$, $df = 17$; $\chi^2/df = 5.22$; RMSEA = .11; CFI = .95; TLI = .92). However, the previous model demonstrated better fit ($\Delta\chi^2(2) = 3.13$, $p > .001$). In all, the tau equivalent model demonstrated the superior fit, compared to the most restrictive one, the parallel model, and the least restrictive one, the congeneric model.[2]

In addition to the fit indicators, Wright and colleagues (2012) also recommend examining factor loadings, as well as reliability estimates, and to do so for the best fitting model (in this case, the tau equivalent model). The factor loadings are expected to be highly significant, and above .70 (Johnson et al., 2011; Wright et al., 2012), while reliability estimates are generally recommended to be equal to or greater than .80 (Johnson et al., 2011). Here, all three factor loadings were .98, with a standard error of .05 (see Table 2.5). As per the results reported above, the reliability estimates for the DMAI and its subscales are also acceptable.

[2] In all the CFA steps, the RMSEA values were above the recommended cutoff (<.09, Browne & Cudeck, 1992) thus indicating poor fit. However, the CFI and TLI values consistently demonstrated good fit. There is existing literature on the disagreement between RMSEA and CFI values (e.g., Lai & Green, 2016; Taasoobshirazi & Wang, 2016; Kenny et al., 2015). In this case, it appears that the relatively small number of degrees of freedom, combined with the sample size (see Kim, 2005) may explain the RMSEA results obtained during the CFAs. Because cutoff values are meant to be "crude aids for interpretation rather than strict thresholds" (Lai & Green, 2016, p. 220), it seems accurate to conclude that the data fits the tau-equivalent model well.

Table 2.5

Item-Level and Superordinate Confirmatory Factor Analysis Results for the DMAI

Factor	Item	Factor Loading (SE)	Error Variance (SE)	*M*	*SD*	Item-total *r*
Anxiety	1. When I'm faced with a decision, I feel nervous.	1.00	.67 (.07)	4.70	1.36	.69
	3. When I'm faced with a decision, I feel calm (R).	.99 (.07)	1.02 (.09)	4.44	1.45	.62
	5. When I'm faced with a decision, I feel anxious.	1.27 (.07)	.69 (.09)	4.68	1.58	.76
Worry	2. When I'm faced with a decision, I can't seem to focus.	1.00	.65 (.11)	3.82	1.57	.65
	7. When I'm faced with a decision, I find it hard to concentrate.	1.04 (.07)	.65 (.11)	3.84	1.61	.65
Emotionality	4. When I'm faced with a decision, I get nauseated.	1.00	1.41 (.12)	2.57	1.52	.53
	6. When I'm faced with a decision, my heart races.	1.16 (.08)	.99 (.10)	4.33	1.56	.68
	8. When I'm faced with a decision, my stomach is often in knots.	1.36 (.09)	1.15 (.13)	3.80	1.76	.69

Note. $N = 341$; (R) = item was reverse coded. All three DMAI factor loadings were .98, with a standard error of .05.

In summary, these analyses support Hypothesis 1, that decision-making anxiety is best represented as a superordinate construct, modeled by its three dimensions representing a higher-order factor.

Convergent and Discriminant Validity

Finally, to test convergent (Hypothesis 2) and discriminant validity (Hypothesis 3), the pattern of correlations between the final version of the DMAI and the set of decision-making and personality variables were examined. The correlations are presented in Table 2.4 and the pattern of results are summarized in Table 2.6. After applying the Bonferroni correction, the adjusted *p*

value was .004. The results demonstrate that decision-making anxiety is related, yet distinct, from other decision-making variables and personality traits. Regarding its relationship with several decision-making individual differences, the results show that decision-making anxiety is positively related, as expected, to avoidant and dependent decision-making styles, regret, and indecisiveness. In addition, it is unrelated to the rational, intuitive and spontaneous decision-making styles.

As for the personality variables, the results demonstrate that decision-making anxiety is positively related to trait anxiety, neuroticism, and unrelated to openness and agreeableness, which is consistent with the initial hypotheses. For agreeableness, this relationship was considered non-significant after applying the Bonferroni correction. For extraversion, and conscientiousness, the results revealed an unexpected small negative relationship between decision-making anxiety and each of these variables.

Finally, the results show that decision-making anxiety and the anxious subscale of the Decision Styles Questionnaire (Dewberry et al., 2013) are indeed positively correlated, as expected.

For gender, an independent-samples *t*-test was conducted to investigate its relationship with decision-making anxiety. Results of the *t*-test confirm that there is a significant difference between men ($N = 68$, $M = 3.06$, $SD = 0.92$) and women ($N = 273$, $M = 4.26$, $SD = 1.09$) and their scores on the DMAI ($t(339) = -8.33$, $p = .00$). Accordingly, supplemental correlation analyses, separated by gender, were conducted. These results are included in Table 2.6.

Table 2.6

Summary and Supplemental Correlations Between DMAI and Other Relevant Variables

		Decision-Making Anxiety			
Correlate	Prediction	Finding[a]	Expected	Women only[b]	Men only[c]
Decision-Making Individual Differences					
Avoidant Style	Positive	.53***	Y	.47***	.64***
Dependent Style	Positive	.42***	Y	.36***	.30*
Rational Style	Unrelated	-.15**	Y	-.05	-.25*
Intuitive Style	Unrelated	.04	Y	-.02	.00
Spontaneous Style	Unrelated	.05	Y	.06	.17
Regret	Positive	.44***	Y	.49***	.37***
Indecisiveness	Positive	.69***	Y	.63***	.71***
Personality Variables					
Trait anxiety	Positive	.57***	Y	.52***	.46***
Neuroticism	Positive	.44***	Y	.37***	.30*
Agreeableness	Unrelated	.13*	Y	.04	.09
Openness	Unrelated	-.06	Y	-.02	.01
Extraversion	Unrelated	-.21***	N	-.24***	-.22
Conscientiousness	Unrelated	-.18***	N	-.13*	-.26*
Items from the Decision Styles Questionnaire					
Anxious Subscale	Positive	.78***	Y	.75***	.71***

Note. [a] $N = 341$; [b] $N = 273$; [c] $N = 68$; *$p < .05$; **$p < .01$; ***$p < .001$; Bonferroni corrected p value = .004; for Gender, data coded Male = 1, Female = 2.

Discussion

The main goal of Study 1 was to develop an anxiety measure specific to the context of decision-making, the Decision-Making Anxiety Inventory. This was accomplished through three studies, divided into the scale development and refinement phase (Study 1a and 1b), and the scale validation phase (Study 1c).

Phase 1 (Study 1a and 1b)

The purpose of Study 1a was to examine the psychometric properties of the preliminary version of the DMAI. The results of the initial EFA demonstrated the presence of five factors,

the first factor extracted representing decision-making anxiety. The finding of more than one factor was expected given Clark and Watson's (1995; 2019) recommendation to generate a broad item pool was followed. Interestingly, of the five factors that emerged, the two dimensions of tension and worry did not appear independently in the data, and instead the relevant items loaded on the first rotated factor. The remaining factors represented items that reflected other decision-making constructs beyond decision-making anxiety, such as delegating decision, indecisiveness, worrying about making the wrong choice (anticipated regret) and decision-making avoidance (Scott & Bruce, 1995; Zeelenberg & Pieters, 2007; Zeelenberg, 2018).

Overall, this first study allowed for the deletion of 21 items in the preliminary version of the DMAI. However, given the length of this reduced version, as well as the resulting factor structure, a second round of data collection was undertaken, in Study 1b, to further investigate factor structure, as well as finalize the DMAI by eliminating more items based on these results. The results of Study 1b pointed to the presence of a strong factor of decision-making anxiety, consistent with the findings in Study 1a. However, contrary to the previous study, the remaining factors did indeed demonstrate the presence of worry (or cognitive interference) and emotionality (or bodily tension). This is consistent with the existing test anxiety literature (Ringeisen & Buchwald 2010; Spielberger & Vagg, 1995; Steinmayr et al., 2018; Zeidner, 1998, 2007, 2010). Overall, the results of this study permitted the reduction of items in order to obtain the final eight-item version of the Decision-Making Anxiety Inventory.

Phase 2 (Study 1c)

The purpose of Study 1c was to validate the construct of decision-making anxiety by confirming the factor structure of the DMAI and by examining its relationship with other relevant variables to ascertain discriminant and convergent validity. Results from the hierarchical

CFA support Hypothesis 1 in that decision-making anxiety is a superordinate construct, represented by the three dimensions of anxiety, worry, and emotionality. As such, it is appropriate to use a single DMAI score in analyses, as this score accurately captures an individual's overall propensity to experience decision-making anxiety.

In terms of convergent and discriminant validity, results of the correlations between decision-making anxiety and other relevant constructs were mostly as expected. First, for convergent validity (Hypothesis 2), all anticipated positive relationships were found within the pattern of correlations. The determination of what constitutes "good" convergent validity was based on several sources. First, and as a general guideline, r = .10 is the lower bound value for a small effect size, .30 for moderate and .50 for large (Cohen, 1992). Second, when discussing convergent validity, Campbell and Fiske (1959) specify that the correlation coefficient be "sufficiently large" (p.82) while Clark and Watson (1995) caution that r=.85 should be the lower bound of what is considered to be too large of a correlation between a newly developed scale and existing measures. Similarly, r = .85 has been referenced as the upper bound value for measures to be considered distinct and non-equivalent (Carlson & Herdman, 2012). Thus, this supports a general guideline that correlation coefficients should not exceed r = .85 when demonstrating convergent validity between related yet distinct constructs.

In all, the results from the Study 1c revealed large correlations between the DMAI and four other measures: avoidant decision-making style (r = .53), indecisiveness (r = .69), trait anxiety (r = .57), and the anxious subscale of the Decision Styles Questionnaire (r = .78; Dewberry et al., 2013). Looking at the literature in scale development in decision-making, a recent study establishing convergent validity for a newly created decision-style scale had correlations ranging from r = .12 to .46, with an average of r =. 31 (Hamilton et al., 2016). In

comparison, the significant correlations obtained in the current study ranged from *r*=.13 to.78, with an average *r* = .41. While the present results have a broader range of values, both average *r* values are within the moderate range of effect sizes (Cohen, 1992).

Although the DMAI does indeed correlate highly with four existing measures, the correlation coefficients obtained are all below *r* =.85, demonstrating that decision-making anxiety is indeed distinct from these for constructs. Furthermore, evidence of this distinction is also present at the conceptual level. As previously discussed, the DMAI and these four scales do not seem to be targeting the same elements of the decision-making process. Specifically, the avoidant decision-making style (Hypothesis 2a) and indecisiveness (Hypothesis 2d) measures focus on the individual's behaviour when making a decision, while decision-making anxiety is targeting the cognitive and emotional experience during a decision. Additionally, the construct of indecisiveness includes emotion experienced *after* the decision has been made. Regarding the high convergence between the DMAI and the STAI (Hypothesis 2e), decision-making anxiety is conceptualized as a situation-specific trait, a derivative of a general trait like trait anxiety. Thus, while overlap is expected, they are still considered distinct due to their differing levels of specificity. Finally, with regards to the anxious subscale of the DSQ (Dewberry et al., 2013; Hypothesis 2g), it appears that it measures some elements that are beyond the theorized scope of decision-making anxiety, in particular time pressure and anticipated regret. In sum, when looking at how each construct is conceptualized, it is clear that decision-making anxiety is distinct from avoidant decision-making style, indecisiveness, trait anxiety, and the anxious subscale of the DSQ (Dewberry et al., 2013).

Regarding discriminant validity (Hypothesis 3), the results confirm the absence of a relationship between decision-making anxiety and the following variables: intuitive (Hypothesis

3b) and spontaneous (Hypothesis 3c) decision-making styles, and openness (Hypothesis 3d). As for rational decision-making style (Hypothesis 3a), the results show the presence of a significant small negative relationship with decision-making anxiety ($p < .01$) but not after applying the Bonferroni correction ($p < .004$). While originally hypothesized to be unrelated, it could be that individuals experiencing high levels of decision-making anxiety are more likely to be overwhelmed by cognitive, affective, and bodily reactions to the decision, and thus might be less likely to make choices in a rational and systematic manner.

For agreeableness (Hypothesis 3e), the results revealed a small positive correlation with decision-making anxiety ($p < .05$), which was no longer significant after adjusting the significance level for the Bonferroni correction ($p < .004$). This relationship was initially hypothesized as unrelated. Agreeableness is a personality trait related to interpersonal behaviours (Costa et al., 1991). While none of the DMAI's items haven a social component, it is possible that someone who is highly agreeable may consider the impact of their decisions on others, which could lead them to experiencing higher levels of decision-making anxiety when faced with a choice.

Furthermore, the results also show a small negative correlation between decision-making anxiety and extraversion (Hypothesis 3f; $r = -.21$), as well as conscientiousness (Hypothesis 3g; $r = -.18$). While these relationships were not expected to be replicated in a non-clinical sample, there is evidence that individuals diagnosed with anxiety disorders are low on both extraversion and conscientiousness (Kotov et al., 2010). More work is needed to confirm whether this result is indeed being replicated in non-clinical samples.

Finally, in addition to the above findings, the results also revealed a significant relationship between decision-making anxiety and gender. Indeed, female participants reported

higher levels of decision-making anxiety than male participants. While the evidence on gender differences in the broader decision-making literature is mixed (Hamilton et al., 2016; Levin et al., 2020; Loo, 2000; Schwartz et al., 2002; Soane & Nicholson, 2008), existing research on anxiety and gender does show that women are more prone to experiencing anxiety, in clinical and non-clinical populations (APA, 2013; Armstrong & Khawaja, 2002; Grant & Odlaug, 2015; Stein & Vythilingum 2015). Thus, the results could indicate the possibility of gender differences in the experience of decision-making anxiety. The pattern of correlations obtained in the supplemental analyses split by gender are similar to those from the whole sample, supporting the relationships between decision-making anxiety and the following variables: avoidant decision-making style, regret, indecisiveness, trait anxiety, and the anxious subscale of the decision-styles questionnaire for women and men. Three differences in the pattern of correlations emerged in the men only sample. However, these results should be interpreted with caution, given the small sample size ($N = 68$). First, the unanticipated negative relationship between decision-making anxiety and extraversion was not found in this subsample. Second, when applying the Bonferroni correction ($p < .004$) two more differences appeared. For men, decision-making anxiety was not positively correlated with the dependent decision-making style, or neuroticism. Overall, while more work is needed to understand these findings, the results appear to highlight potential gender-related differences in the experience of decision-making anxiety.

While the results discussed herein provide support for content and construct validity, it is important to also acknowledge the DMAI's potential limitations, in the context of external validity. Specifically, the samples used for the scale development and refinement were mostly comprised of young post-secondary students who were predominantly female. As such, caution is needed when generalizing the results to other groups. Of note, this limitation is common in the

decision-making field, as student samples are still frequently used in scale development (e.g., Hamilton et al., 2016; Voss et al., 2019).

In conclusion, results from Study 1c provide evidence for the conceptualization decision-making anxiety as a superordinate construct, able to be measured with a global DMAI score. Furthermore, the pattern of relationships uncovered in this study help to define decision-making anxiety's nomological net, thus allowing for a better understanding of where this new construct fits within existing decision-making individual differences, as well as how it relates to common personality traits and gender.

Chapter III. The Relationship Between Decision-Making Anxiety, Decision-Making Competence, and Perceived Decision Quality in Young Adults: An Investigation of Self and Peer Perspectives (Study 2)

Introduction

There is a strong decision-making research tradition examining the influence of decision features, such as decision difficulty, on decision outcomes. In comparison, research examining individual differences in decision-makers has been lacking (Hamilton et al., 2016; Mohammed & Schwall, 2009). An interesting individual difference construct to examine is decision-making anxiety. Previous research on this subject used a broad approach, investigating the impact of general trait and/or state anxiety on decision-making. For example, individuals with higher levels of trait anxiety tend to make more conservative financial decisions (Gambetti & Giusberti, 2012), and individuals with higher levels of state anxiety are more likely to seek out and rely on advice from others (Gino et al., 2012). What is currently missing from the landscape of individual differences in decision-making is a narrower and situation-specific trait approach to studying anxiety in decision-making. That is, there is a need to investigate anxiety that stems directly from being faced with a decision.

Chapter 2 introduced the Decision-Making Anxiety Inventory (DMAI) to examine whether, and if so, how, decision-making anxiety influences the overall decision-making process. As such, the primary goal of Study 2 was to use the DMAI to investigate the possible influence of decision-making anxiety on individual decision-making. As per the results in Study 1, decision-making anxiety can be viewed as a superordinate construct, reflected by a global score on the DMAI. However, it was essential to further investigate this individual difference construct, as well as its contextualized measure, in order to gain more knowledge into the role of decision-making anxiety in the decision-making process itself. To this end, this second study examines the relationship between decision-making anxiety and two important decision-making variables—decision-making competence and decision quality. This study further contributes to

the investigation of decision-making anxiety by examining how peers view decision-makers' own decision-making anxiety as well as their decision-making competence and quality.

Decision-Making Competence

Decision-making competence represents an individual's overall decision-making ability, as measured by performance on a battery of several decision-making tasks (Bruine de Bruin et al., 2007; Bruine de Bruin et al., 2020; Parker & Fischhoff, 2005). The construct, and measure, of decision-making competence was introduced by Parker and Fischhoff (2005) in order to help shift the focus of decision research to individual differences. To conceptualize decision-making competence, they examined existing models of decision-making for underlying skills. More specifically, these core skills are (i) belief assessment, which relates to how an individual judges the probability of outcomes; (ii) value assessment, which represents how an individual evaluates outcomes; (iii) integration, which is related to how an individual merges both beliefs and values when deciding, and (iv) metacognition, which refers to an individual being aware of the breadth of his or her skills (Bruine de Bruin et al., 2007; Bruine de Bruin et al., 2020; Parker & Fischhoff, 2005). In other words, decision-making competence relates to the decision-making process itself as opposed to decision outcomes, with the assumption that if individuals possess the underlying skills to make good decisions, their decisions will likely lead to good outcomes (Bruine de Bruin et al., 2020; Parker & Fischhoff, 2005).

The Adult Decision-Making Competence (A-DMC) index (Bruine de Bruin et al., 2007) is an objective, task-based assessment of decision-making competence that maps onto the four fundamental skills presented above. It was adapted from the Youth Decision-Making Competence (Y-DMC) Index (Parker & Fischhoff, 2005), which was developed with content geared towards adolescents. Performance on the A-DMC reflects an individual's general

decision-making competence, regardless of decision type, importance, or frequency. This general focus is a common approach to the study of individual differences in decision-making. For example, the Balloon Analogue Risk Task (BART; Lejuez et al., 2002) is a popular task that measures an individual's general propensity to make risky decisions. In the BART, participants are asked to choose how much to inflate a balloon, over 90 trials. Each pump has a monetary value, and the balloon will pop if overinflated, in which case money accrued is lost (Lejuez et al., 2002). In a similar vein, decision-making competence consists of an assessment of individuals' global decision-making skills, as indicated by their performance on different decision-making tasks. A strength of measures like the BART and the A-DMC is that they do not rely on self-report; rather, they are performance-based measures of decision-making individual differences. Below is a brief overview of the six tasks in the A-DMC, as described in Bruine de Bruin et al. (2007; 2020).

The *Resistance to Framing* task assesses if the choices an individual makes are influenced by differences in the problem description. The general decision-making skills underlying this component are value assessment and integration. The *Recognizing Social Norms* task measures an individual's ability to evaluate the social norms associated with their peer group. This task taps into both the belief and value assessment skills. The *Under/Overconfidence* task measures degree to which an individual can recognize the extent of their knowledge. The associated core skills are belief assessment and metacognition. The *Applying Decision Rules* task assesses the degree to which an individual is able to utilize decision rules described in a problem. This maps onto the integration skill. The *Consistency in Risk Perception* component evaluates the degree to which an individual understands probability rules, which taps directly into the core decision-making skill of belief assessment. The *Resistance to Sunk Costs* task assesses the degree

to which an individual is able to overlook prior investments when they make a decision. This task maps onto the value assessment skill. All tasks of the A-DMC can be used together, or individually. Though related, the tasks are independent from one another (Bruine de Bruin et al., 2007).

The A-DMC has been determined to be a psychometrically sound measure of objective decision-making competence. While initial test-retest results after a nine-day separation between administration for each A-DMC tasks were mostly lower than what is considered adequate (r = .58 for Resistance to Framing, r = .46 for Recognizing Social Norms, r = .47 for Under/overconfidence, r = .77 for Applying Decision Rules, r = .51 for Consistency in Risk Perception, r = .61 for Resistance to Sunk Costs), longitudinal results show that scores on the Y-DMC predict those on the A-DMC eleven years later (Parker et al., 2018). In addition, studies have found similar patterns of correlations across the different A-DMC tasks (e.g., Bavolar, 2013; Liang & Zou, 2018; see also Bruine de Bruin et al., 2020 for a brief review) supporting that notion that decision-making competence is reflected across each task. Other studies have also shown that the pattern of correlations between the A-DMC and other relevant constructs (e.g., cognitive ability, decision styles) are consistent with theoretically predicted relationships (Bruine de Bruin et al., 2007; Parker et al., 2018), indicating support for convergent validity. To complement the A-DMC instrument which measures objective decision-making competence, Bruine de Bruin et al. (2012) introduced the notion of *perceived* decision-making competence. Specifically, they developed a one-item measure to assess an individual's perception of their decision-making competence, in which participants are asked "what percentage of other people do you think are worse decision makers than you?," using a 0 to 100% response scale. In their study examining age differences in decision-making competence amongst adults, they found a

similar pattern of relationships between subjective (self-reported) decision-making competence and objective decision-making competence, in terms of their correlations with age, and a measure of fluid cognitive ability. In all, the pattern of evidence supports the A-DMC as useful assessment tool reflective of an individual's overall decision-making competence.

Decision-making competence has been studied in several contexts, and it has received continued research attention since its introduction in the last 15 years. For example, it has been examined according to its relationships with other decision-making variables. Specifically, Bruine de Bruin et al. (2007) reported that it correlated with decision making styles (Scott & Bruce, 1995), such that the overall A-DMC scores were found to positively correlate with rational and intuitive decision-making styles, and decision outcomes, and negatively correlate with avoidant and spontaneous decision-making styles, as well as regret. Another study examined decision-making competence in the context of risky choice scenarios as part of a longitudinal study on adolescents (Parker & Weller, 2015). The results revealed that youth with higher decision-making competence scores had higher expected value sensitivity, in that they gambled when the risk was advantageous, but were risk-averse when it was not.

Furthermore, the A-DMC has been used in a variety of different contexts. For example, one study examined age differences in decision-making competence (Bruine de Bruin et al., 2012). The results showed a significant decrease in performance on the Resistance to Framing and Applying Decision Rules tasks with age, which was mediated by fluid cognitive ability (e.g., the ability to solve problems, use reasoning skills, and recognize patterns). Regarding the four other tasks, while the results did not demonstrate age-related declines, performance on the tasks was positively related to both age and fluid cognitive ability. Another study investigated the relationship between decision-making competence and memory processes (Del Missier et al.,

2013). Overall, the results demonstrated that increased performance on memory tasks was always linked to increased performance on decision-making tasks, with the authors highlighting the role of memory processes in decision-making. The results also showed relationships between specific memory processes and the different tasks of the A-DMC.

In addition, decision-making competence has also been examined in the context of personality differences. For example, results from a recent study revealed that higher scores on the conscientiousness, honesty/humility and openness dimensions (measured through the HEXACO; Ashton & Lee, 2007) were related to higher decision-making competence scores (Weller et al., 2018). The findings also showed that men who scored lower on the extraversion scale were found to have higher decision-making competence scores, while women who scored higher on the emotionality scale also had higher decision-making competence scores (Weller et al., 2018). Another group of researchers examined leaders' personality characteristics and their level of decision-making competence. Results demonstrate that leaders who report higher levels of need for cognition perform better on two subscales of the A-DMC: Framing and Resistance Sunk Costs (Carnevale et al., 2011). In general, these studies demonstrate that the A-DMC is a useful instrument for measuring decision-making competence, and that it has been the assessment tool of choice for researchers interested in investigating individual differences in decision-making.

Of import to the current study, Shields et al. (2016) examined the relationship between stress and decision-making competence. In a laboratory task, the authors induced stress in half of their participants through the Trier Social Stress Test for Groups (von Dawans et al., 2011). They subsequently administered the A-DMC. Their results show that participants in the stress condition had higher scores of decision-making competence, in comparison to the control

condition. The authors mention that there is some evidence that an increase in dehydroepiandrosterone, a stress-related hormone, can lead to an increase in dopaminergic activity, which in turn, can improve cognitive functioning, suggesting that this could perhaps explain their current results. Shields et al. (2016) also highlight that at face value, their results may be confusing, given that decisions made under stress are often regretted. They speculate that in real-world decision scenarios, stress can lead an individual to be tempted to make poorer decisions based on their negative mood or willingness to seek out rewards. They further explain that "most of our poor decisions made during stress were made even when we 'knew better'—or, had the decision-making competence to know that it was a bad decision" (Shields et al., 2016, p. 57). As such, the decisions people make under stress are not necessarily in line with their actual ability to make competent decisions. However, the authors do not elaborate further on this point, and highlight the need for further research.

While the results of this study are interesting, it is, however, unclear how the results drawn from an incidentally induced stress condition would inform the study of decision-making anxiety. As in previous research on anxiety in decision-making (e.g., Cumming & Harris, 2001; Gino et al., 2012), the results are limited to providing insights on the effect of an emotional state on a decision, and not necessarily on a situation-specific personality trait, such as the tendency to experience anxiety when facing a decision. Indeed, incidental emotions are experienced during a decision, but are not relevant to the decision itself (Lerner et al., 2015). In this case, the stress that the individuals are experiencing is directly related to the stressful task they had to perform (i.e. the Trier Social Stress Test), and not necessarily stemming from having to complete the A-DMC (i.e. completing a decision-making task that will assess their decision-making competence).

Perceived Decision Quality

Another area of interest when assessing decision-making competence is decision quality. This construct relates to whether an individual has a general tendency to make good decisions (Wood & Highhouse, 2014). It has also been conceptualized as a propensity to avoid negative outcomes (Bruine de Bruin et al., 2007), as well as a tendency to make rational choices (Curseu & Schruijer, 2012). These different conceptualizations point to a long-standing debate about decision quality in the decision-making literature, that is, whether decision quality is related to the process (i.e. how decisions are made), or to decision outcomes (see Keren & Bruine de Bruin, 2003 for in depth review).

Decision quality is an important factor in understanding decision-making, as it focuses on the outcomes of a decision, or what happens after a decision is made. In the context of individual differences in decision-making, it has been used in the past to test the predictive validity of specific constructs. Research on decision-making competence and decision quality has yielded mixed results. For example, Bruine de Bruin et al. (2007) found significant relationships, such that competence and quality are positively related, while Geisler and Allwood (2015), did not. Other studies have focused on the relationship between decision-making styles and decision quality. For example, the rational decision-making style has been positively linked to decision-makers' perceptions of having incurred good outcomes following their decision (Curseu & Schruijer, 2012; Wood & Highhouse, 2014).

In line with Wood and Highhouse (2014), for the present study, decision quality is viewed as an individual's subjective experience of good decision outcomes. As such, it is referred throughout the text as perceived decision quality.

The Current Study

The current study examines how decision-making anxiety relates to decision-making competence and perceived decision quality. Overall, it was expected that high levels of decision-making anxiety should impair an individual's ability to make competent decisions. This hypothesis is in line with the transactional process model of test anxiety (Spielberger & Vagg, 1995), applied to decision-making anxiety. The higher the level of decision-making anxiety, the more the individual would experience Worry and Emotionality during the decision itself, which would interfere with their ability to make use of their decision-making skills. As previously reviewed in the Chapter 1, research on test anxiety has found that high test-anxious individuals are distracted by their own thoughts in an evaluative situation, which interfere with the task and negatively affects their test performance (Bonaccio et al., 2012; Cassady & Johnson, 2001; Hembree, 1988; Sarason, 1972; Spielberger et al., 1978). According to the transactional process model, high levels of test anxiety lead to a diversion of the individual's cognitive resources from the task at hand to irrelevant thoughts about themselves, related to the situation they are facing (Zeidner, 1998). Thus, it was hypothesized that:

Hypothesis 1a: Decision-making anxiety is negatively related to decision-making competence.

Specifically, it was anticipated that higher scores on the DMAI might be associated with lower A-DMC composite scores. The core skills leading to decision-making competence, belief assessment, value assessment, integration and metacognition (Bruine de Bruin et al., 2007; Bruine de Bruin et al., 2020), are cognition-based and require the individual faced with a decision to focus on the decision itself. Based on the transactional process model, individuals who are experiencing higher levels of decision-making anxiety would be more prone to

distraction by their thoughts about themselves, and therefore, would likely have difficulty accessing their cognitions directly related to decision-making skills. Past research has suggested that certain components of the A-DMC are more cognitively demanding than others (Del Missier et al., 2013). As such, it was hypothesized that:

Hypothesis 1b: Decision-making anxiety is negatively related to competence on the Resistance to Framing task.

Hypothesis 1c: Decision-making anxiety is negatively related to performance on the Under/Overconfidence task.

Regarding the other components of the A-DMC, there is no existing literature that could guide specific hypotheses about performance on these tasks. Thus, it was difficult to hypothesize whether there would be a significant relationship between decision-making anxiety and performance on Consistency in Risk Perception, and Resistance to Sunk Costs.

With regards to perceived decision-making competence, it was expected that those who experience high levels of decision-making anxiety would not perceive themselves as competent decision-makers. It was hypothesized that:

Hypothesis 1d: *Decision-making anxiety is negatively related to perceived decision-making competence.*

In addition, the relationship between decision-making anxiety and perceived decision quality was also investigated. It was anticipated that:

Hypothesis 2: *Decision-making anxiety is negatively related to perceived decision quality*

In other words, individuals who experience higher levels of decision-making anxiety would report a greater general tendency to experience poor decision outcomes.

Another area of interest for this study was to examine the relationship between self and peer ratings of perceived decision-making competence and perceived decision quality. The inclusion of peer ratings was to provide complementary data on the variables of interest, a method that is typically underutilized (Connelly & Ones, 2010). Of particular interest was whether focal participant and peer data converged. Indeed, the personality literature provides insight into the use of peer data, with several meta-analyses demonstrating the usefulness of observer ratings, with respect to their accuracy and predictive validity (Connolly et al., 2007; Connelly & Ones, 2010; Oh et al., 2011). For example, Connolly and colleagues (2007) found meta-analytic correlations between self and observer ratings ranging from .46 to .62 for the Big 5 factors. In addition, observer ratings have been found to predict behaviours like academic achievement and job performance as accurately, in some cases more accurately, than self-ratings (Connelly & Ones, 2010; Oh et al., 2011). These findings highlight that for personality traits, observers seem familiar enough with the ratee's personal characteristics that they can make accurate predictions about future behaviour. Taken together, these three meta-analyses showcase the richness and use of the data obtained from others.

For the current study, it was hypothesized that:

Hypothesis 3a: Decision-making anxiety is positively related to peer-rated perceived decision-making anxiety

Hypothesis 3b: Decision-making anxiety is negatively related to peer-rated decision-making competence

Hypothesis 3c: Decision-making anxiety is negatively related to peer-rated perceived decision quality

In other words, it was expected that focal and peer data would converge. In particular, it was anticipated that peers would be familiar enough with the focal participants' decision-making, both in terms of how they experience the decision-making process, and the outcomes that follow, to accurately speak to their decision-making competence and quality. Thus, individuals who experience high levels of decision-making anxiety would not be perceived by their peers as competent decision-makers who make quality decisions.

Finally, as per the results of Study 1, decision-making anxiety is correlated, yet distinct from general trait anxiety. Because decision-making anxiety is conceptualized as a situation-specific trait, it was expected that it would be a better predictor of objective and perceived decision-making competence and perceived decision quality, as compared to general trait anxiety, a broad personality trait. As such, the DMAI's incremental validity was assessed. Specifically, it was hypothesized that:

> *Hypothesis 4: Decision-making anxiety demonstrates an incremental explanation of variance (i.e., incremental validity) in a) objective decision-making competence b) perceived decision-making competence, and c) perceived decision quality, above and beyond general trait anxiety.*

Method

Participants and Procedure

All participants were university students who were signed up on the University of Ottawa School of Psychology's Integrated System for Participation in Research (ISPR), via one of their first-year level classes. They were recruited using an ad on the ISPR portal website. The measures were administered via Qualtrics, an online data collection platform. At the end of the questionnaire, participants were then asked if they were interested in participating in the second

phase of the study, that is, by providing contact information for a friend that knows them "well enough to answer questions on their decision-making habits" and capabilities (Wood & Highhouse, 2014, p.225). Because past research has demonstrated that observer type is not a moderator of the convergence between self-observer ratings (Connolly et al., 2007), participants were not given any further instruction on the type of peer that they could refer. Peer participants were recruited by email, explaining that their friend has recommended them for participation in our study. The study participation link was included in the email. For ISPR participants, compensation consisted of 1% course credit, and if they accepted to refer a peer, they were entered into a draw to win a 50$ Amazon gift card. For peer participants, compensation consisted of being entered into a draw to win a 50$ Amazon gift card.

Data cleaning is described below. The final focal sample consisted of 403 participants, who were predominantly female (69.3%) and Caucasian (53.4%), with a mean age of 19.14 years (*SD* = 1.58). In all, 33%[3] of the focal sample referred a peer, and of those peers, only 12% chose to participate. The final peer sample consisted of 19 participants, who were mainly female (57.9%), with a mean age of 25.50 years (*SD* = 12.96). The ethnic background of the respondents was varied, with the three most common groups being Caucasian (26.3%), Arabic (21.1%), or Asian (15.8%). Most peers were friends (57.9%) or significant others (21.1%), with the remaining participants identifying themselves as family members.

To ensure both focal and peer participants were assessing the same decision-making phenomena, they were instructed to refer to the focal participants' school-related decisions.

[3] A *t-test* confirmed there was no significant difference in DMAI scores between the group of focal participants who referred a peer ($N = 117$, $M = 4.05$, $SD = 1.20$), and the group of those who did not ($N = 286$, $M = 4.12$, $SD = 1.22$); $t(401) = 0.50$, $p = .62$; power = 0.998).

Measures for Focal Participants

Socio-Demographic Questionnaire. Through the online participant pool, participants answer a socio-demographic questionnaire that included questions on age and gender, as well as year of study. The question on gender had the option of "Not Listed," allowing for individuals who identify as nonbinary to have an answer choice that reflects their identity. As such, gender was dummy coded for analyses.

Decision-Making Anxiety. Decision-Making Anxiety was assessed using the 8-item Decision-Making Anxiety Inventory (DMAI) developed in Study 1. Cronbach's α for this an all other measures are presented in Table 3.1.

Trait Anxiety. Trait Anxiety was measured using the 20-item State Trait Anxiety Inventory, Form Y-2 (Spielberger et al., 1983), as in Study 1.

Objective Decision-Making Competence. Decision-Making Competence was assessed using Bruine de Bruin et al.'s (2007) Adult Decision-Making Competence (A-DMC) instrument. The measure is divided into six distinct decision-making tasks, that can be used individually or combined for a composite score. Higher scores reflect better performance on the tasks. For the present study, two tasks were not administered: Applying Decision Rules and Recognizing Social Norms. This choice was made to reduce the incidence of responder fatigue. This is a common strategy adopted by other researchers who study decision-making competence (e.g., Weller et al., 2018). Of note, the core skills assessed by these tasks are also measured by the other subscales in the instrument.

The Resistance to Framing dimension was assessed via two types of problems presented to the respondent. First, the individual was asked to identify their preference for two options. All seven problems are presented with a 6-point scale, ranging from 1 (representing option A)

through 6 (representing option B). Then, the participant was asked to rate their judgement of a product or a situation (7 items total) on a 6-point scale, ranging from 1 (worst rating) to 6 (best rating). A sample item is "Suppose a student got 90% correct in the mid-term exam and 70% correct in the final-term exam, what would be your evaluations of this student's performance?."

The Under/Overconfidence dimension was assessed through a series of statements that the participant first indicated as true or false, and then, indicated how sure they were of their answer. The 6-item response scale provided to them ranges from 50% (meaning they just guessed) to 100% (meaning they were absolutely certain of their answer). A sample item is "Problems with in-laws contribute to more than 30% of divorces."

The Consistency in Risk Perception domain was assessed by a series of questions asking participants to estimate the chance of specific situations happening in the future. They can enter any probability between 0 and 100%. A sample item is "What is the probability that you will get into a car accident while driving during the next year?."

Finally, the Resistance to Sunk Costs dimension was assessed through a series of problems where the respondent chooses between two options. Each problem had a scale ranging from 1 (representing option A) to 6 (representing option B). A sample item is "After a large meal at a restaurant, you order a big dessert with chocolate and ice cream. After a few bites you find you are full and you would rather not eat any more of it." Participants were asked if they are more likely to eat more (option A) or to stop eating (option B).

This instrument has good internal consistency, with an overall α of .85, with most individual tasks achieving acceptable to good alpha coefficients, ranging from .67 to .80 (Bruine de Bruin et al., 2007; Parker et al., 2018). Some tasks, particularly Resistance to Sunk Costs and

Recognizing Social Norms, have obtained values below .60 in certain studies (e.g., Geisler & Allwood, 2015; Parker et al., 2018).

Perceived Decision-Making Competence. Participants' own rating of their perceived decision-making competence was measured using an item developed by Bruine de Bruin and colleagues (2012). Participants were asked: "What percent of other people do you think are worse decision makers than you?." The response scale ranged from 0 to 100%.

Perceived Decision Quality. Perceived decision quality was measured using Wood and Highhouse's (2014) items that they developed in their study on decision quality, examining self and peer ratings. A sample item is "the decisions I make are quality ones." Wood and Highhouse (2014) report adequate internal consistency (α=.77) for this unidimensional, 5-item measure. The response scale ranges from 1 (Strongly Disagree) to 5 (Strongly Agree).

Measures for Peer-Raters

Socio-Demographic and Screening Questionnaire. Peer-raters were asked questions about their relationship with the focal participant, as well as basic information on their age and gender. They were also asked about their perceived ability to rate their peer about their decision-making (adapted from Wood and Highhouse, 2014). Specifically, they were asked to rate the following item on a 1 (Strongly Disagree) to 5 scale (Strongly Agree): "I believe I can adequately rate my friend's decision-making ability." One peer participant was removed based on their response to the screening questionnaire, having answered that they strongly disagreed with the item.

Peer Perceived Decision-Making Competence. Peer-raters were asked to rate the focal participant's decision-making competence, through a modified version of the Bruine de Bruin et

al.'s (2012) measure. The item was modified as follows: "What percent of other people do you think are worse decision makers than your friend?" The response scale ranged from 0 to 100%.

Peer Perceived Decision Quality. Peer perceived decision quality was measured using Wood and Highhouse's (2014) items developed for peer-raters. A sample item is "The decisions my friend makes end up working out well." Wood and Highhouse (2014) report good internal consistency (α=.84) for this unidimensional, 5-item measure The response scale ranges from 1 (Strongly Disagree) to 5 (Strongly Agree).

Peer Perceived Decision-Making Anxiety. Three items were created in order to assess the peer-rater's perception of the focal participant's decision-making anxiety. Peers were asked to rate the following items: "When faced with a decision, my friend appears to experience anxiety," "My friend's decision-making anxiety interferes with their decision-making abilities," and "My friend's decision-making anxiety interferes with their ability to make quality decisions." The response scale ranged from 1 (Strongly Disagree) to 7 (Strongly Agree).

Results

Data Cleaning

The data for focal participants was screened and cleaned using a similar strategy as Study 1. Specifically, 71 participants (11% of the initial sample) were identified as "careless responders," by not answering two items according to instructions (Meade & Craig, 2012), and were subsequently removed. An additional 145 participants were excluded due to missing data. Then, 41 participants were removed after being identified as outliers in response time (either too fast (under 15 minutes), or too slow (over 4 hours). Ten participants were removed, as they were older than 25, in keeping with a focus on emerging adults. Finally, one participant was removed due to their score on the intra-individual response variability statistic (IRV), which is the

"standard deviation of responses across a set of consecutive item responses for an individual" (Dunn et al., 2018, p. 108). No significant issues relating to skewness or kurtosis were identified.

Then, the data was screened for multivariate outliers. Values for Mahalanobis Distance, Cook's Distance, and Leverage (Tabachnick & Fidell, 2013) were calculated. In total, three participants were removed, who were identified as problematic for two out of the three values. Finally, none of the assumptions of multicollinearity, normality, linearity, and homoschedasticity were violated. The final sample consisted of 403 participants.

Correlations and Group-Level Differences

The pattern of correlations can be found in Table 3.1 below. Information on means and standard deviations is also included in the table. Decision-making anxiety was found to be positively correlated with trait anxiety, as measured by the STAI. In addition, the results revealed that decision-making anxiety was negatively related to the following variables: perceived decision quality, perceived decision-making competence, objective decision-making competence (i.e. the A-DMC composite score), and two of the A-DMC tasks: Resistance to Sunk Costs and Under/Overconfidence. Overall, the pattern of correlations was mostly as anticipated.

In order to ascertain the potential impact of gender on the results of the study, an independent-samples *t*-test was performed. Results confirmed that there was a significant difference between women ($N = 283$, $M = 4.33$, $SD = 1.15$) and men ($N = 119$, $M = 3.54$, $SD = 1.18$) on their DMAI scores ($t(400) = -6.28$, $p = .000$). As such, gender was controlled for in the regression analyses. Supplemental analyses separated by gender are included for reference in Appendix B, Tables B.1, B.2 and B.3.

Table 3.1

Descriptive Statistics and Correlations for Focal Participants

Variable	*M*	*SD*	1	2	3	4	5	6	7	8	9
1. Decision-Making Anxiety	4.10	1.21	(.89)								
2. Trait Anxiety	47.02	10.48	.64***	(.92)							
3. Perceived Decision Quality	3.54	0.59	-.25***	-.38***	(.81)						
4. Resistance to Framing	0.97	0.46	-.03	-.05	.09	(.67)					
5. Consistency in Risk Perception	0.54	0.16	.05	.12*	.01	-.18***	(.75)				
6. Resistance to Sunk Costs	4.01	0.67	-.11*	.04	.03	-.07	.07	(.44)			
7. Under/Overconfidence	0.90	0.07	-.10*	-.07	-.01	.11*	-.06	.03	(.88)		
8. ADMC Composite Score	0.00[a]	0.49	-.10*	.02	.06	.45***	.42***	.53***	.55***	(N/A)	
9. Perceived DM Competence	55.35	18.43	-.16**	-.25***	.27***	.00	-.01	.05	.08	.06	(N/A)

Note. $N = 403$; Cronbach's alpha values are in parentheses; N/A = not available; [a] The ADMC composite score consists of the mean Z-score of the four A-DMC tasks; *$p < .05$; **$p < .01$; ***$p < .001$.

Regression Analyses

To further explore the relationships between decision-making anxiety and each variable of interest, regression analyses were conducted, while controlling for gender. These results are included in Table 3.2. For Hypothesis set 1, results indicated that decision-making anxiety was a significant negative predictor perceived decision-making competence (b = -1.91, t(399) = -2.45, p = .015, R^2 = .04, F(3,399) = 5.52, p = .001), in line with Hypothesis 1d. However, when applying a Bonferroni correction (adjusted p = .004), this result is no longer significant. The remaining analyses were non-significant (p > .05) contrary to expectations outlined in Hypotheses 1a to 1c. However, the findings supported Hypothesis 2, demonstrating that decision-making anxiety was a significant negative predictor of perceived decision quality (b= -0.15, t(399) = -6.22, p = .00, R^2 = .11, F(3,399) = 16.41, p = .00).

Table 3.2

Regression Analyses for Decision-Making Anxiety on Objective and Perceived Decision-Making Competence, and Perceived Decision Quality

	ADMC Composite Score				Resistance to Framing				Consistency in Risk Perception			
	Step 1		Step 2		Step 1		Step 2		Step 1		Step 2	
	b	*se*	*b*	*se*	*b*	*se*	*b*	*se*	*b*	*se*	*b*	*se*
Control variables												
Male	0.12*	0.05	0.09	0.06	-0.02	0.05	-0.03	0.05	0.01	0.02	0.02	0.02
Other	0.39	0.48	0.43	0.48	0.16	0.47	0.18	0.47	0.02	0.16	0.01	0.16
Predictor variable												
DM Anxiety			-0.03	0.02			-0.02	0.02			0.01	0.01
R^2	.014		.019		.001		.002		.001		.005	
ΔR^2			.005				.001				.004	

	Resistance to Sunk Costs				Under/Overconfidence			
	Step 1		Step 2		Step 1		Step 2	
	b	*se*	*b*	*se*	*b*	*se*	*b*	*se*
Control variables								
Male	0.03	0.08	-0.02	.08	0.03***	0.01	0.03***	0.01
Other	0.10	0.69	0.17	0.69	0.07	0.07	0.07	0.07
Predictor variable								
DM Anxiety			-0.07*[a]	0.03			-0.00	0.00
R^2	.000		.013		.035***		.038	
ΔR^2			.013				.003	

Table 3.2 (Continued).

	Perceived DM Competence				Perceived Decision Quality			
	Step 1		Step 2		Step 1		Step 2	
	b	*se*	*b*	*se*	*b*	*se*	*b*	*se*
Control variables								
Male	5.41**	1.99	3.89	2.08	-0.15*	0.06	-0.27***	0.06
Other	-30.83	18.27	-28.83	18.18	-1.19*	0.58	-1.04	0.56
Predictor variable								
DM Anxiety			-1.91*	0.78			-0.15***	0.02
R^2	.026**		.040		.024***		.110	
ΔR^2			.033*				.086***	

Note. $N = 403$. Gender was dummy coded for analyses given that more than two options were listed for participants and female is the reference group; DM = Decision-Making; [a] *t*-test is significant, *F* test is not; *$p \leq .05$; **$p \leq .01$, ***$p \leq .001$; Bonferroni-corrected $p = 0.004$.

Peer Analyses

Given the small sample size of peer respondents (N=19), a true test of the third set of hypotheses could not be completed. Instead, paired-samples t-tests were conducted to gain some exploratory information on the similarities and differences between focal and peer participants' assessments of the focal participants' decision-making anxiety, decision-making competence, and decision quality. Results are presented in Table 3.3. These analyses revealed no significant differences between peer-rated perceived decision-making anxiety of the focal participant (N =19, M = 4.09, SD = 1.42), and the focal participants' DMAI score obtained through self-report (N = 19, M = 4.27, SD = 1.37); $t(18) = 0.62$, p =.54; power = 0.32). However, results revealed significant differences between focal participants (N = 19, M = 3.49, SD = 0.67) and their peers (N = 19, M = 3.96, SD = 0.52), for perceived decision quality ($t(18) = -3.78$, p = .001). Similar results were obtained for perceived decision-making competence ($t(18) = -2.43$, p = .026), showing a significant difference between focal participants (N = 19, M = 55.42, SD = 20.05) and their peers (N = 19, M = 70.79, SD = 19.15). Peer participants tended to rate the focal participants more positively than focal participants rated themselves on perceived decision-making competence and quality.

Correlation analyses were also conducted to examine the pattern of relationships between focal and peer data, keeping in mind that the analyses are based on a small sample. Results are in Table 3.4. More specifically, the relationships between self-rated decision-making anxiety, and peer perceived decision-making anxiety (Hypothesis 3a), peer perceived decision-making competence (Hypothesis 3b), as well as peer perceived decision quality (Hypothesis 3c) were examined. These exploratory results revealed a significant positive correlation between the focal

participants' DMAI scores, and the peer perceived decision-making anxiety scores. No support was provided for Hypotheses 3b and 3c.

Table 3.3

Paired-Sample T-Test Results for Self- and Peer-rated Data

	Focal		Peer			
Variable	*M*	*SD*	*M*	*SD*	*t*	*p*
Decision-Making Anxiety	4.09	1.42	4.27	1.37	0.62	.54
Perceived Decision Quality	3.49	0.67	3.96	0.52	-3.78	.001
Perceived Decision-Making Competence	55.42	20.05	70.79	19.15	-2.43	.026

Note. $N = 19$.

Table 3.4

Descriptive Statistics and Correlations for Self- and Peer-rated Data

Variable	*M*	*SD*	1	2	3	4	5
1. Perceived Decision-Making Competence	55.42	20.05	-				
2. Peer Perceived Decision-Making Competence	70.79	19.15	.01	-			
3. Peer Perceived Decision-Making Anxiety	4.09	1.42	-.32	-.22	-		
4. Decision-Making Anxiety	4.27	1.37	-.18	-.01	.58**	-	
5. Perceived Decision Quality	3.49	0.67	.16	.24	-.41	-.82***	-
6. Peer Perceived Decision Quality	3.96	0.52	.31	.16	-.53*	-.42	.63**

Note. $N = 19$; $*p < .05$; $**p < .01$; $***p < .001$.

Incremental Validity

To test Hypothesis 4, a hierarchical multiple regression was conducted to investigate whether decision-making anxiety demonstrates an incremental explanation of variance over and above trait anxiety, for the variables of interest. Results are presented in Table 3.5. A set of dummy codes to control for gender was added in the first step, then in the second step, trait anxiety was added, and finally, in the last step, decision-making anxiety. The results are mixed. For the Resistance to Sunk Costs task, trait anxiety did not account for any amount of variance ($R^2 = .002, p = .38$). On the other hand, once added to the model, decision-making anxiety accounted for an additional 3% of the variance ($b = -.14, t(398) = -3.64, p < .001$; $R^2 = .04, \Delta R^2 = .03, F(4,398) = 3.56, p < .01$; $sr = -.18$). Similar results were obtained for objective decision-making competence, as measured by the A-DMC composite score, for which decision-making anxiety is a significantly better predictor than trait anxiety. Trait anxiety did not account for any significant contribution to the variance ($R^2 = .015, p = .45$), while decision-making anxiety accounted for an additional 1.5% ($b = -.07, t(398) = -2.49, p = .013$; $R^2 = .03, \Delta R^2 = .015, F(4,594) = 3.11, p = .015$; $sr = -.12$). However, when applying a Bonferroni correction (adjusted $p = .004$), this result is no longer significant. Moreover, support for incremental variance for the other variables is not apparent. For perceived decision quality, perceived decision-making competence, and the Consistency in Risk Perception task, the change in the R^2 value was not significant when decision-making anxiety was added to the model. For the remaining variables, that is, the Resistance to Framing task and the Under/Overconfidence task, neither trait anxiety nor decision-making anxiety accounted for a significant amount of variance.

Table 3.5

Incremental Validity Results for Decision-Making Anxiety on Objective and Perceived Decision-Making Competence, and Perceived Decision Quality

	Resistance to Framing						Consistency in Risk Perception					
	Step 1		Step 2		Step 3		Step 1		Step 2		Step 3	
	b	*se*	*b*	*se*	*b*	*se*	*b*	*se*	*b*	*se*	*b*	*se*
Control variables												
Male	-0.02	0.05	-0.03	0.05	-0.03	0.05	0.01	0.02	0.02	0.02	0.02	0.02
Other	0.16	0.47	0.19	0.47	0.19	0.47	0.02	0.16	-0.01	0.16	-0.00	0.16
Predictor variables												
Trait Anxiety			-0.00	0.00	-0.00	0.00			0.00*	0.00	0.00*	0.00
DM Anxiety					-0.01	0.03					-0.00	0.01
R^2	.001		.003		.004		.001		.017		.017	
ΔR^2			.002		.001				.016*		.000	
	Resistance to Sunk Costs						Under/Overconfidence					
	Step 1		Step 2		Step 3		Step 1		Step 2		Step 3	
	b	*se*	*b*	*se*	*b*	*se*	*b*	*se*	*b*	*se*	*b*	*se*
Control variables												
Male	0.03	0.08	0.04	0.08	-0.03	0.08	0.03***	0.01	0.03***	0.01	0.03***	0.01
Other	0.10	0.69	0.07	0.69	0.11	0.68	0.07	0.07	0.07	0.07	0.07	0.07
Predictor variables												
Trait Anxiety			0.00	0.00	0.01**	0.00			0.00	0.00	0.00	0.00
DM Anxiety					-0.14***	0.04					-0.00	0.00
R^2	.000		.002		.035		.035***		.037		.038	
ΔR^2			.002		.032***				.002		.001	

Table 3.5 (Continued).

	ADMC Composite Score						Perceived Decision-Making Competence					
	Step 1		Step 2		Step 3		Step 1		Step 2		Step 3	
	b	*se*	*b*	*se*	*b*	*se*	*b*	*se*	*b*	*se*	*b*	*se*
Control variables												
Male	0.12*	0.05	0.13*	0.05	0.09	0.06	5.41**	1.99	3.86	1.97	4.10*	2.04
Other	0.39	0.48	0.38	0.49	0.39	0.48	-30.83	18.27	-26.53	17.85	-26.66	17.87
Predictor variables												
Trait Anxiety			0.00	0.00	0.01*	0.00			-0.40***	0.09	-0.43***	0.11
DM Anxiety					-0.07*[a]	0.03					0.45	0.98
R^2	.014		.015		.030		.026**		.075		.075	
ΔR^2			.001		.015*				.049***		.000	

	Perceived Decision Quality					
	Step 1		Step 2		Step 3	
	b	*se*	*b*	*se*	*b*	*se*
Control variables						
Male	-0.15*	0.06	-0.24***	0.06	-0.26***	0.06
Other	1.19*	0.58	-0.94	0.53	-0.93	0.53
Predictor variables						
Trait Anxiety			-0.02***	0.00	-0.02***	0.00
DM Anxiety					-0.04	0.03
R^2	.024**		.185		.188	
ΔR^2			.161***		.003	

Note. $N = 403$. Gender was dummy coded for analyses given that more than two options were listed for participants and female is the reference group; DM= Decision-Making; **$p \leq .05$; **$p \leq .01$, ***$p \leq .001$; Bonferroni-corrected $p = 0.004$;[a] the values obtained here differ from the results presented in Table 3.2, suggesting the possibility of a suppression effect.

Supplemental Analyses for Decision-Making Competence and Perceived Decision Quality

To further understand how decision-making anxiety might be related to objective and subjective decision-making competence, as well as perceived decision quality, supplemental correlation analyses were conducted between each DMAI factor, and the variables of interest. While the DMAI can be considered a superordinate construct, it is still informative to take a more granular, and factor-level, approach.

For the Anxiety factor, correlation results revealed significant negative relationships with perceived decision quality ($r = -.20, p < .001$), perceived decision-making competence ($r = -.16, p = .001$), and Resistance to Sunk Costs ($r = -.11, p = .025$). For the Worry factor, results demonstrated that it was significantly negatively correlated with perceived decision quality ($r = -.36, p < .001$) and perceived decision-making competence ($r = -.20, p < .001$). Finally, for the Emotionality factor, the correlation analyses revealed significant relationships with perceived decision quality ($r = -.13, p = .012$), Resistance to Sunk Costs ($r= -.11, p = .023$), Under/Overconfidence ($r = -.12, p = .016$), and the A-DMC composite score ($r = -.13, p = .007$).

Discussion

Decision-making anxiety is a newly introduced construct that refers to an individual's general tendency to experience anxiety when faced with a decision. It is important to understand the role of decision-making anxiety in the decision-making process, and how it relates to other relevant individual differences in decision-making. Accordingly, the present study's primary goal was to explore the relationship between decision-making anxiety and decision-making competence (both objective and subjective), and perceived decision quality.

Objective Decision-Making Competence. It was first hypothesized that decision-making anxiety would be negatively related to objective decision-making competence (Hypothesis 1a), as measured by the A-DMC composite score, and to two specific tasks: Resistance to Framing (Hypothesis 1b), and Under/Overconfidence (Hypothesis 1c). Of note, based on lack of information in the existing literature, no hypotheses were offered for the other tasks included in this study. Results from the regression analyses did not support these hypotheses, and all other results were non-significant. Based on these results, decision-making anxiety was not a significant negative predictor of objective decision-making competence.

These results were unexpected. Because the A-DMC is a task-based performance measure of decision-making competence, participants are called on to make decisions during administration of the instrument. Based on the transactional process model of test anxiety (Spielberger & Vagg, 1995), it was anticipated that a similar process would occur in decision-making anxiety, in which an individual experiencing high levels of decision-making anxiety would be distracted by their own cognitive, affective, and bodily reactions during the decision, which would have a detrimental impact on decision-makers' ability to make competent decisions, including the decisions required by the A-DMC tasks. This relationship was expected because past research has shown that high test anxiety has a detrimental impact on test-takers' performance on tests (Bonaccio et al., 2012; Cassady & Johnson, 2001; Hembree, 1988; Sarason, 1972; Spielberger et al., 1978). Because the Resistance to Framing task and the Under/Overconfidence task have been described as more cognitively demanding (Del Missier et al., 2013), it was expected that this relationship would be especially apparent in these tasks.

In light of these results, it important to consider the possibility that individuals who experience high levels of anxiety in a decision-making situation have similar underlying

decision-making skills that those who do not. Looking to the Test Anxiety literature, research has demonstrated that test-anxious individuals are a heterogenous group, including those who have poor study and test-taking skills, and those who "have efficient study skills, but who suffer from anxiety blockage and consequently have problems retrieving information during an exam" (Zeidner, 1998, p.52). In other words, these examinees are not deficient in their knowledge, but struggle in their ability to access it under pressure, in a testing situation. Applied to the current study, it is possible that the sample consisted mostly of respondents who have good decision-making competence, despite experiencing high levels of anxiety in decision situations. It might be that the A-DMC, while consisting of decision-making tasks, was still able to capture whether they actually possessed the underlying skills. Another recent study on decision-making may also lend support for this explanation. As previously mentioned, Shields and colleagues (2016) also obtained unanticipated findings in their study on decision-making competence under stress. The authors found a significant positive relationship between stress and the A-DMC. They suggest that perhaps decision-making competence can stay intact, even when making bad decisions, in that people sometimes know better than what they actually decide upon. Applied to the current study, it is possible that underlying decision skills stay the same, regardless of the level of decision-making anxiety typically experienced by an individual when making decisions.

Subjective variables. It was also hypothesized that decision-making anxiety would be negatively related to perceived decision-making competence. Results from the correlation analyses support Hypothesis 1d. As for the regression analyses, the relationship is considered non-significant when taking into account the Bonferroni-corrected *p*-value. As such, it is important that the results be interpreted with caution. With this in mind, the findings tentatively suggest that individuals who experience high levels of decision-making anxiety perceive

themselves as poor decision-makers. The supplemental analyses also lend support for this hypothesis, with the Anxiety and Worry factors of the DMAI being significantly negatively related to perceived decision-making competence. The second hypothesis of interest focused on perceived decision quality. Specifically, it was anticipated that decision-making anxiety would be negatively related to perceived decision quality. Results from both correlation and regression analyses, as well as from the supplemental analyses support Hypothesis 2.

While the effect sizes for these results are considered small (Ferguson, 2016), they are nonetheless interesting in light of the findings for objective decision-making competence. They suggest the possibility that there is a discrepancy between objective and subjective accounts of decision-making competence and perceived decision quality, for those who experience high levels of decision-making anxiety. In other words, while some individuals report experiencing cognitive, affective, and bodily reactions of anxiety when faced with a decision, and they view themselves as poor decision-makers who make bad decisions, in reality, they are not so different compared to their calmer counterparts. The idea that people have inaccurate self-views has been studied extensively. Borrowing from the Dunning-Kruger Effect literature, numerous studies over the years have shown that people are not good at assessing their own abilities, and that "the impressions people have of their skill are only weakly to modestly correlated with objective performance" (Dunning, 2011, p.280). The pattern of correlations obtained in this study did not reveal any significant relationships between perceived decision-making competence and any of the A-DMC tasks, or the A-DMC composite score. The results were the same for perceived decision quality. A potential explanation for this phenomenon is that individuals have preset perceptions about themselves which influence their self-assessment (Dunning et al., 2003). Applied to the current study, it is possible individuals interpret their cognitive, affective and

bodily responses to decisions as valid indicators of their skills, leading them to believe they are bad decision-makers. This also lends itself well to a self-fulfilling prophecy, in which their underlying preconceived beliefs about being bad decision-makers exacerbate their anxiety when they are faced with a choice. Furthermore, erroneous self-perceptions have been shown to have behavioural consequences. One study found that even though women and men did not differ in their performance on a science quiz, female participants perceived themselves as being less skilled in science, which ultimately led to them being more likely to decline participating in a science competition (Ehrlinger & Dunning, 2003). It is possible that individuals who experience high levels of decision-making anxiety also experience similar consequences. For example, they might be more prone to over-rely on input from others, or even be more likely to defer decisions to others. These types of behaviours would also reinforce their beliefs that they are not competent decision-makers. In sum, while the findings support Hypothesis 1d and 2 as anticipated, it was not expected that subjective accounts of decision-making competence and quality would differ from the results on the A-DMC. As such, the above interpretation is offered in light of the combination of the pattern of results a whole, and was thus initially unforeseen.

Results from the peer-raters also support the notion of a discrepancy between objective and subjective accounts of decision-making competence. The data, however, should be interpreted with caution, given the small sample size. The independent samples *t*-test revealed a significant difference between focal participants and peers in terms of perceived decision-making competence and perceived decision quality. Indeed, peers rated the focal participants as better decision-makers than focal participant rated themselves. Interestingly, peers were accurate in their assessment of their friends' experience of decision-making anxiety. Indeed, peers' perception of the focal participants' decision-making anxiety was positively correlated with focal

participants' DMAI scores, and no significant differences were found between peer-perceived and self-rated decision-making anxiety. Turning to the personality literature, several meta-analyses have demonstrated the validity and utility of observer ratings. For example, in their paper, Connolly et al. (2007) highlight that while self and observer ratings overlap, they each provide unique variance in their explanation of personality variables (e.g., The Big 5). In another meta-analysis, results revealed not only that observer ratings are accurate, but that they were actually better predictors of job performance and academic performance, above and beyond self-ratings (Connelly & Ones, 2010). As such, the authors suggest that in certain contexts, observer ratings might be more accurate. Similar results were obtained in a different meta-analysis. Indeed, observer ratings of the five-factor model were found to be significant predictors of job performance, and again, above and beyond self-ratings (Oh et al., 2011). It could be that the peer data obtained in the current study might signal the possibility that when it comes to decision-making competence and quality, peer-raters are more accurate in their judgements than decision-makers themselves. Thus, it is possible that individuals who experience high levels of decision-making anxiety are more competent than they believe they are. These results also imply that peers are good source of information with respect to individual differences in decision-making. From a methodological standpoint, it also suggests that seeking information from others is a useful approach. Again, as these findings are based on a small sample size (N=19), further research is needed to confirm the accuracy of these exploratory results.

In all, existing literature provides evidence of a discrepancy between subjective and objective accounts of performance, as well as self and observer ratings. It is possible that the same phenomenon is occurring in the present study. Indeed, the results suggest that objective indicators of decision-making competence do not necessarily reflect the participants' own

subjective experience of the quality of their decisions, and of their perception of their own competence. The exploratory peer data also highlights the possibility that focal participants view themselves more harshly than their peers.

Additionally, the evidence in support of Hypothesis 2, that DMAI would be negatively related to perceived decision quality, is interesting in the context of the long-standing debate over what constitutes "good" decision-making, and how we measure it in research. Keren and Bruine de Bruin (2003) offer an in-depth review of the issue, that is, whether decision quality is a product of the decision-making process, or whether is related to decision outcomes. The main position of those who favour process is that by possessing good decision skills, one makes good quality decisions. On the other hand, some posit that the focus should be on the consequences of decisions, regardless of the processes used to get there (Keren & Bruine de Bruin, 2003). Because the A-DMC assesses underlying decision skills (e.g., process variable), the decision was made to include Wood and Highhouse's (2014) measure as well, which measures an individual's self-reported experience of good decision outcomes. The development of their measure was influenced by Milkman et al.'s (2009) review decision-making research, in which they "propose that an optimal decision is one that a decision maker would regard as the right choice" (Milkman et al., 2009, p.380). Results from the present study offer some potentially pertinent data to this debate. If anxious decision-makers are not much different than the typical decision-maker in terms of decision-making competence, but subjectively believe they experience bad decision outcomes, then this could suggest that possessing good decision-making skills is not necessarily an accurate indicator of decision quality. This result is not completely unexpected. While the authors who developed the DMC measures consistently report significant results between objective decision-making competence and decision outcomes (Bruine de Bruin et al., 2007;

Parker et al., 2015; Parker et al., 2018), across their three studies, Geisler and Allwood (2015) did not. As above, Shields and colleagues' (2016) suggestion of intact competence even when making bad decisions could be appropriate for these results as well.

Decision-Making Anxiety and Trait Anxiety. As in Study 1, the correlation between decision-making anxiety and trait anxiety was examined to confirm that the constructs are distinct, and that the measures are non-equivalent. The correlation coefficient obtained was r = .64, which is similar in magnitude to the value obtained in Study 1c (r = .57). This supports the conceptualization of decision-making anxiety as a situation-specific trait, in that it is a correlated, yet distinct, contextualized form of general trait anxiety.

Finally, the fourth hypothesis for the present study related to establishing decision-making anxiety's incremental validity over trait anxiety. Results from the hierarchical regression were mixed, with the DMAI showing incremental validity for only the A-DMC composite score, and the Resistance to Sunk Costs task. Of note, the results for the A-DMC composite score become non-significant when taking into account the Bonferroni correction. As such, it cannot be ascertained that the DMAI provides a significant incremental explanation of the variance above and beyond the STAI in the prediction of perceived decision quality, perceived decision-making competence, and Consistency in Risk Perception. This said, for the Resistance to Sunk Costs task and the A-DMC composite score, trait anxiety alone was not a significant predictor of these variables. In sum, further research is needed to further explore the DMAI's incremental validity.

Decision-Making Anxiety and Gender. Of note, the results from the current study also revealed a significant difference between women and men, in terms of the level of decision-making anxiety they reported. Indeed, it appears that women experience higher levels of

decision-making anxiety than men. This gender difference was first highlighted in Study 1. Given the well-established gender-anxiety link present in the broader anxiety literature, this result was not unexpected. This finding can help clarify the relevance of gender as a variable of interest in the individual differences in decision-making literature, in which the current landscape is mixed (Hamilton et al., 2016; Levin et al., 2020; Loo, 2000; Schwartz et al., 2002).

Strengths, Limitations, and Future Research.

Overall, results of the present study revealed that individuals who experience high levels of decision-making anxiety did not differ in terms of objective decision-making competence, compared to their calmer counterparts. However, they did perceive themselves as bad decision-makers who make poor quality decisions. The unanticipated findings suggest the possibility of a discrepancy between objective and subjective measures of decision-making competence, and perceived decision quality. These results should be interpreted in light of strengths and limitations of the study. Ideas for future studies in order to further examine the relationship between decision-making anxiety and decision-making competence are discussed below.

First, regarding strengths, the inclusion of perceived decision-making competence, as well as a subjective measure of decision quality ensured a more nuanced examination of the several aspects of the decision-making process. This combination is not often studied in the decision-making literature. Furthermore, at a conceptual level, the idea of including peers in the study in order to capture external data on our focal participants also added to the richness of the information obtained. Unfortunately, a limitation of the study was that both the referral to peer and actual peer response rates were very low. As such, there was not enough data to run the planned analyses of the information obtained from peers. The main results are thus based on self-report data, which can be affected by common-method variance issues (Podsakoff et al., 2003;

Podsakoff et al., 2012). Finally, in terms of generalizability, it is important to take into account that the study focused on emerging adults, that is, no participant was over the age of 25. As reviewed above, age-related differences in decision-making competence have been identified in a study conducted in older adults (Bruine de Bruin et al., 2012). On the other hand, given that decision-making anxiety is conceptualized as a situation-specific trait, it is expected it to be relatively stable over the lifespan. Looking to the personality literature, past research has shown that the relationship between Big 5 personality traits and positive and negative affect is stable throughout life (Wilson & Gullone, 1999). It is thus recommended that future studies examine the relationship between decision-making anxiety and decision-making competence in different age groups to examine the age-related differences in decision-making anxiety.

Results from the current study can inform potential avenues of research. Given the possibility of a discrepancy between objective and subjective decision-making competence, future studies could examine the reasons behind decision-makers' perceptions of their decision-making competence and decision quality. This would allow exploration of what information they are using to make this judgement, for example, past mistakes, negative feedback from others, high levels of self-criticism, to name a few. Not only would qualitative data help further explain the anxiety-competence relationship, it could also offer insight into the process vs. outcome debate surrounding decision quality (Keren & Bruine de Bruin, 2003). In addition, it would be important to investigate the peer-raters' perspective as well. Specifically, it could be interesting to explore what observations they use to inform their perceptions, and the degree to which the information they favour converges with what the information utilized by the self-rater.

Finally, another potential fruitful research avenue would be to replicate the current study, but with some methodological changes. Given its correlational design and unanticipated

findings, it is important to further examine the decision-making anxiety and decision-making competence relationship. Turning again to the Test Anxiety literature, numerous studies have examined the possible moderating factors of anxiety on performance (Zeidner, 1998). For example, the test environment and atmosphere has been shown to have an effect on performance outcomes. In his extensive review, Zeidner (1998) describes how evaluative situations have been shown to lead to poorer outcomes in high-test-anxious individuals. Particularly, individuals who experience high test anxiety interpret evaluative situations as especially threatening. He also highlights, however, that in neutral non-evaluative situations, research has shown that high-test-anxious individuals perform better than in evaluative situations. In this case, neutral situations are perceived as less threatening to the high test-anxious individual. Another well-established moderator in the Test Anxiety literature is feedback. Indeed, those who report higher levels of trait anxiety tend to perceive feedback as an additional threat, which subsequently impairs their performance (Zeidner, 1998). Administration of the A-DMC in a laboratory setting would allow for the possibility of manipulating these potential moderators to examine the anxiety-competence relationship. This experimental replication would allow for further insights into the discrepancy between objective and subjective accounts of decision-making competence and quality, while also accounting for other potentially relevant variables that are not captured in a cross-sectional design.

In addition, computer administration of the A-DMC would allow for the of incorporation eye movement tracking, complementing self-report data. A recent financial decision-making study (Król & Król, 2019) found that this method was able to differentiate between those using skill and those using chance to make their decisions. This approach could be useful in determining if there are any differences in where individuals look, and for how long, between

those who experience high levels of decision-making anxiety and those who do not. These modifications to the study design would be helpful in understanding the results obtained in the present study, and to further investigate how anxious decision-makers compare to their less anxious counterparts in their underlying objective decision-making skills.

In conclusion, the current study revealed that those who experience higher levels of decision-making anxiety viewed themselves as poor decision-makers who do not make quality decisions. Results from objective measures, and the exploratory data from peer-raters did not support this perception, which highlights the possibility of a discrepancy between objective and subjective accounts of decision-making competence and perceived decision quality. These findings give insight into the role of decision-making anxiety in the decision-making process, and lay the groundwork for future avenues of research.

Chapter IV. Decision-Making Anxiety as an Antecedent of Job Search Behaviours: A Prospective Design of Job Search

(Study 3)

Introduction

An important context in which individuals are called to make decisions is the process of looking for, and deciding on, a new job. In general, "career choices can be thought of as a series of decisions" (Bonaccio et al., 2014, p.239). Indeed, there are many events that precede the final decision of accepting a job offer (van Hooft et al., 2020). For example, some of these decisions start in the earlier stages of the process, such as deciding on the criteria for the job one is seeking (e.g., job type, industry) and choosing to apply to a prospective employer (Li & Song, 2018; Wanberg et al., 2020). Others come later, like in the case of multiple job offers (Harold et al., 2013; Wanberg et al., 2012). In general, the decisions involved in the job search and job choice context feel important to most job seekers. Job decisions are associated with "substantial thought and worry" and described as "heart-wrenching" (Wanberg et al., 2012, p.909). Many decisions made along the journey are personally significant to job seekers, and thus, the job search and job choice process is likely to be anxiety-provoking for some individuals (van Hooft et al., 2020; Wanberg et al., 2020).

Anxiety has been broadly conceptualized as a response to uncertainty (Blakey & Abramowitz, 2020; LaBar, 2016; Zeidner, 1998). Without a doubt, looking for employment is a context that is ripe for uncertainty, given the many factors involved. Indeed, job seekers must often consider the various demands involved in their job search, such as personal financial situation, networking resources, and match between employer stated requirements in a job posting and employee skills to name a few (Wanberg et al., 2012). The complex nature of job search and job choice is thus quite pertinent to examining individual differences in decision-making anxiety. Indeed, as a situation-specific trait, decision-making anxiety stems from a specific situation (decision-making), and varies from one person to another (personality trait)

(Zeidner, 1998; Zeidner & Matthews, 2018; Ziegler et al., 2019). Because job choice involves many decisions, it is an interesting context to study decision-making anxiety, and to investigate if, and how, decision-making anxiety helps provide insights into the job search and choice process.

The primary goal of Study 3 was to further examine the relation between decision-making anxiety and individual decision-making in a specific decision-making context: job search and job choice. To this end, decision-making anxiety was cast as an antecedent of job search behaviours that would lead to poor or unfavorable job choice outcomes. Like Study 2, the current study provides an investigation of decision-making anxiety and how it relates to the decision-making process itself, and does so in a specific context. Study 3 further contributes to the job search and job choice literature by focusing on job seeker individual differences, an area noted as being in need for further research (Boswell et al. 2012; van Hoye 2018; Wanberg et al., 2012).

Job Search and Job Choice

Job search has been conceptualized as a self-regulated and goal-directed process (da Motta Veiga & Turban, 2014; Wang & Yan, 2018), where "cognition, affect, and behavior are devoted to preparing for, identifying, and pursuing job opportunities" (van Hooft et al., 2020, p. 1). Furthermore, it is an experience common to a varied range of job seekers, such as new entrants to the workforce, those who have lost their jobs, and those who are employed but looking for a change (Boswell et al., 2012; Saks 2005). While the particulars of the job seeking experience will be different for different job seekers (e.g., a new graduate versus a mid-career professional), the aim of being employed is common. The present study focused on examining job search and job choice in young adults.

The complex nature of job search necessitates many decisions throughout the journey (Wanberg et al., 2020). For example, individuals decide the criteria they are looking for in a job (e.g., preferred pay, location), and choose the primary medium of their job search, like the internet (Côté et al., 2006; van Hooft, et al., 2020). Two distinct yet related decision-making processes relevant to the job search context have been identified: the information search process and the choice process (Crossley & Highhouse, 2005). On one hand, "information search deals with how information about the decision is gathered" (Crossley & Highhouse 2005, p.257). For example, the information search process can be illustrated by an individual seeking employment who is focusing on researching only government positions, thus not including private-sector jobs in his or her search criteria, or, by an individual who was recently laid off and is now expanding his or her search to neighbouring cities within an hour of his or her current home. The types of decisions executed during this phase of the job search process are often guided by broader employment goals and strategy (van Hooft, et al., 2020). As these examples show, while the ultimate decision is job choice (e.g., accepting an employment offer), the information search process is a series of decisions that lay the groundwork for this final decision.

Compared to the search process that precedes it, the choice process "involves analyzing, comparing, and subjectively weighing the information [gathered during the search] to form a final decision" (Crossley & Highhouse 2005, p.257). For example, an individual faced with two employment offers might return to his or her list of important criteria (e.g., compensation, benefits, opportunities for growth, proximity to home) and then evaluate both offers according to these parameters, ultimately choosing the job that fares best on these criteria (Beach, 1990). In other words, the choice process involves manipulating the data obtained during, and as a result of, the information search process. As such, the final job choice made by an individual is

influenced by the information he or she had previously gathered. Of import, the quality of the job ultimately selected is determined, in part, by behaviours that take place early on in the job search process. Thus, "job search research focuses on how behavior and efforts of individuals influence their progressions in the selection process and ultimate job choice decisions" (Boswell et al., 2012, p. 133).

Similar to how individual differences are considered an area ripe for investigation in decision-making research in general (Hamilton et al., 2016; Mohammed & Schwall, 2009; Siebert et al., 2020; Weller et al., 2018), so are individual differences in job search behaviours in particular. A focus on the *antecedents* of job search behaviours is important and relevant, as it can provide information on what differentiates individuals in terms of their behaviour and effort as they progress through the job search process toward their final job choice. In their review of the employee job search literature, Boswell et al. (2012) propose several future research directions, one of which is investigating how individual characteristics impact search behaviours and outcomes. This recommendation is echoed by Wanberg et al. (2012), who noted the need for further research on the relationship between antecedent variables and specific features of the job search such as strategies adopted, or how much effort is placed in the search. These recommendations are reprised by van Hoye (2018) who still highlights the need for more research in this area. This is important, because the job search literature has demonstrated that in general, "changes in job search behaviors are associated with job search outcomes" (Saks, 2005, p. 158). In turn, understanding some of the predictors of key job search behaviours can help provide a more fine-grained understanding of the job search process. Finally, Manroop and Richardson (2016) note that more research is needed on the emotional well-being of young job seekers in particular. Specific to the current study, an individual's propensity to experience

decision-making anxiety is thought to be relevant in the job search and job choice context, as it can provide valuable insights into its potential impact on job search behaviours, and subsequent job choice outcomes.

Decision-Making Anxiety as a Predictor of Job Search Behaviours

Two categories of job search behaviours are likely to be influenced by decision-making anxiety: the effort devoted to, and intensity of, the search, as well as types of search strategies employed by job seekers.

Effort and Intensity. Job search effort and intensity both relate to the degree to which an individual is engaged in a job search (Wanberg et al., 2020; van Hoye, 2018). For example, an engaged job seeker makes sure to take some time, perhaps on a daily basis, to look for job opportunities. He or she would further send out résumés to several potential employers regularly, perhaps by taking the time to tailor cover letters to the employers' specific characteristics. On the other hand, someone who is less engaged in his or her job search will not prioritize job search activities over other life activities, paying minimal attention to the job search relative to, for instance, spending time with friends or family. Of note, the type of job seeker may relevant in the context of effort and intensity. Indeed, those who are employed or in school have to balance other commitments in addition to their job search (Wanberg et al., 2020). Moreover, there appears to be differences in the amount of time spent in the job search phase. In terms of age-related differences, older adults (50+) tend to spend more time unemployed, on average 5.8 more weeks than those aged between 30 and 49 years old, and 10.6 more weeks than those aged between 20 and 29 years old (Wanberg et al., 2016).

In the broader job search literature, effort and intensity constitute one of the three dimensions of job search, with the other two being content/direction (e.g., the activities

performed by the individual during his or her job search, and the quality of these activities) and temporal/persistence (e.g., an individual's persistence over time in search for employment) (Kanfer et al., 2001; Manroop, & Richardson, 2016; van Hoye, 2018; Wanberg, et al., 2020). Despite effort and intensity being classified as one of the three dimensions of job search, they each represent different concepts. Specifically, job search effort focuses on the individual's general perception of how much energy they have invested in the job search (Blau, 1993), either cognitively, emotionally, and/or behaviourally (van Hoye, 2018). On the other hand, job search intensity is more precise in that it concerns *how* an individual is engaged in the job search. In other words, intensity refers to what behaviours and activities the job seeker engages in during the process, such as improving one's résumé, and filling out applications (Boswell et al., 2012; Blau, 1993; van Hoye, 2018). Furthermore, job search intensity has been separated in two stages: preparatory search behaviour, and active job search behaviour (Blau, 1993; van Hoye 2018; Wanberg et al., 2020). The preparatory phase consists of planning behaviours, with a focus on information gathering efforts, such as locating job openings, and revising one's résumé. On the other hand, the active job search is linked to more explicit job-seeking behaviours, such as submitting résumés and going on interviews. In other words, the preparatory phase is more effort-based, while the active phase is more commitment-based (van Hoye, 2018).

How much intensity and effort an individual invests in job search behaviours, both in the preparatory and active phases of their job search, are series of decisions in and of themselves, which inevitably impact the final job choice. Recent reviews have highlighted that self-reported effort and intensity are positively correlated with finding employment (van Hoye, 2018; Wanberg et al., 2020). Moreover, a recent meta-analysis found that job search intensity was positively correlated with the number of job interviews, the number of job offers, and

employment status, for all job-seeker types (van Hooft et al., 2020). Notably, the meta-analytic correlations were stronger for new entrants to the work force (who are typically younger) and employed individuals, compared to those who were unemployed.

Studies have investigated what might influence effort and intensity in the job search process. One existing model, the emotional response model, proposes that the unpleasant reactions experienced by the job seeker during the job search process (such as stress and frustration) can lead to unhelpful behaviours, like avoidance and withdrawal, as well as a sense of helplessness (Saks, 2005). Moreover, these unpleasant reactions experienced by job seekers can lead them to "expand, contract, or otherwise modify their search activities, regardless of the utility of those activities" (Barber et al., 1994, p. 741). For example, Barber et al.'s (1994) results showed a shift from searching for jobs that fulfill higher-order growth needs to those that fulfill lower-level existence needs as stress accumulated over time during the job search. In other words, it appears that the emotional experience of job seekers can trigger a change in what types of jobs they seek out, initially focusing their attention on jobs that seem personally fulfilling in terms of actualization and esteem, to then shifting to jobs that satisfy basic needs such as food and shelter. A qualitative study on job search emotions experienced by novice job seekers (defined as "students who had not yet searched for their first postgraduation full-time employment", Bonaccio et al., 2014, p. 241) found similar results. For example, one participant explained how their search changed over time: "Initially it was purely public health based and then it became more anything even remotely medical and then it became something that will pay the bills" (p. 248). Furthermore, recent studies have included a focus on emotion regulation (Wang & Yan, 2018) and metacognition (Song et al., 2020) in order to further investigate how emotional reactions may play a part in job search processes. In short, past research has shown

that an individual's emotional reactions to seeking employment influence behaviours during the job search.

Strategies. The three-dimensional conceptualization of job search includes effort/intensity, temporal/persistence, as well as the content/direction dimension (Kanfer, et al., 2001; Manroop, & Richardson, 2016; van Hoye, 2018; Wanberg, et al., 2020). The content/direction dimension has received less research attention than the other two dimensions (van Hoye, 2018). However, one area of research in the job search literature relevant to this dimension is job search strategy (Manroop & Richardson, 2016; van Hoye, 2018; Wanberg, et al., 2020). Specifically, Crossley and Highhouse (2005) identified three job search strategies: focused, exploratory and haphazard search strategies. Individuals who adopt a focused strategy direct their search efforts to a small number of carefully chosen employment options, usually determined early on in the job search process. For instance, a job seeker looking for a sales position in the automobile industry might have her heart set on working for a particular car company she has long admired, and, as a result, will only consider working for that company, applying to all the dealerships selling that brand in her city. Individuals utilizing an exploratory strategy tend to research multiple employment opportunities, while also being open to other options that might arise during the search effort. In this case, a job seeker would be open to more opportunities, such as applying for jobs across a number of dealerships, but perhaps restricting his applications to dealerships focused on a certain market segment (luxury vehicles, for instance). In contrast to the exploratory and focused strategies, the haphazard strategy is typically more passive and involves gathering information in a broad (and often disorganized) manner, both within and outside the job-seeker's expertise and experience. Here, a job seeker might apply to every and any job opening he or she finds, with little discrimination or attention

as to what the job actually entails. Returning to the example, a job seeker might apply indiscriminately to all dealerships, regardless or market segment, but also apply to other types of jobs, such as those in the food industry. Focused and exploratory strategies are planned and deliberate, while the haphazard strategy is usually utilized without a proper rationale or set goal (Crossley & Highhouse, 2005; van Hoye 2018; Wanberg et al., 2020). Interestingly, the focused search strategy is positively associated with job satisfaction and number of job offers, while haphazard search strategy is negatively related to both job satisfaction and number of job offers (Crossley & Highhouse, 2005). In other words, the strategy that an individual adopts during the job search process has an impact on future job-related outcomes such as employment offers and job satisfaction.

Of note, few studies have investigated the antecedents of the three job search strategies reviewed above, namely focused, exploratory and haphazard (Crossley & Highhouse, 2005; van Hoye, 2018). Two studies are particularly relevant as they focus on emotions. In a qualitative study examining emotions and job search strategies, novice job seekers who used more emotional language when recalling their job search were more likely to have displayed a haphazard job search strategy, compared to those with recollections containing less emotion-laden content (Bonaccio et al., 2014). Specifically, panic and anxiety seem to have underlined the adoption of this suboptimal strategy, with one participant recalling: "I become even more panicky and then, I just started to apply for everything" (Bonaccio et al., 2014, p. 244). Further, the majority of novice job seekers who adopted focused or exploratory strategies used emotion-neutral language when discussing their job search experiences. Notably, this study focused specifically on young adult job seekers. It is also worth highlighting De Battisti et al.'s (2016) study of work-attributed psychological distress in the context of job search strategies amongst

unemployed job seekers. The authors measured work-attributed psychological distress by administering a depression scale, and asking whether the participant thought there was a link between their psychological health and their employment situation. Results from this study showed a positive relationship between work-attributed psychological distress and haphazard search strategy, as well as a negative relationship between work-attributed psychological distress and focused search strategy. Thus, it appears that emotional experiences are a relevant consideration in the study of the focused, exploratory, and haphazard job search strategies.

Job Choice Outcomes

An important area of interest in the job search process is the consequences of job search, in other words, the outcomes that result from an individual's employment seeking efforts. There exists several metrics used in the existing literature, which can be divided into two categories: objective and subjective outcomes. With respect to objective outcomes, the most commonly measured variable is employment status, that is, whether the job seeker actually becomes employed after his or her search (Saks, 2005; Wanberg, et al., 2020). Another common metric utilized in job search research is the number of offers obtained (Manroop & Richardson, 2016; Saks, 2005). The number of offers obtained have been conceptualized as an indirect indicator of job choice, when assessed in combination with employment status, in that this construct can account for individuals who remained unemployed by choice (Crossley & Stanton, 2005). In other words, employment status only captures whether or not an individual accepted a job offer, and does not differentiate between individuals who are unemployed because they did not receive any offers and those who rejected offers received because the offer was unsatisfactory (e.g., low pay). Several studies have shown a positive relationship between the effort/intensity markers of job search behaviours and employment status, as well as a significant positive relationship

between job search intensity and number of offers (Côté et al., 2006; Kanfer et al., 2001; Saks, 2005; Saks, 2006; Saks & Ashforth, 2000; Wanberg, et al., 2020). A recent meta-analysis supports these findings, with results demonstrating positive correlations between job search quality (a set of job search behaviours that include job search effort and intensity), and the number job offers received and employment status (van Hooft et al., 2020).

Fewer studies have been conducted on the outcomes of the exploratory, focused, and haphazard job search strategies. However, the existing evidence suggests that the exploratory job search strategy is positively related to the number of job offers received (Crossley & Highhouse, 2005; Koen et al., 2010), while the haphazard search strategy is negatively related to the number of job offers received (Crossley & Highhouse, 2005). As for focused search strategy, results have been mixed, with some evidence of a positive relationship between this approach and number of offers (Koen et al., 2010), and some evidence of an absence of a significant relationship (Crossley & Highhouse, 2005). Because Bonaccio et al. (2014) only interviewed job seekers at the conclusion of their search, all interviewees had secured a job. However, it was clear that many haphazard job seekers had "settled" for a job, suggesting they may have received fewer job offers from which to choose a more satisfactory employment option.

Job search scholars often complement the objective indicators with subjective indicators of job choice outcomes. In general, this type of indicator pertains to the job seekers' appraisal and experience of their job search outcomes. For example, perceived employment quality, most often measured through job satisfaction, consists of the job seekers' subjective evaluation of the job they ultimately selected (van Hooft et al., 2020). Similarly, perceived person-job fit is another common marker of job seekers' perception of their job search outcomes (van Hooft et al., 2020; Wanberg et al., 2020). Another particularly interesting subjective job choice indicator

is satisfaction with the decision-making process. Introduced by Crossley and Highhouse (2005), this outcome concerns the job seekers' overall satisfaction with how they approached their job search. Specifically, it refers to whether job seekers are happy with the approach they took to find a job, whether they would use the same approach in the future, and whether they are satisfied with the process itself, and with the decision they made to accept the job. This subjective account is important, because it complements the number of offers or subsequent employment status by focusing on the job seekers' appraisal of the outcome. In other words, one job seeker could be employed at the end of their search, but have regrets about the decisions made during the process whereas another job seeker could be very satisfied with the strategies adopted throughout, but unfortunately, remains unemployed due to external factors (e.g., few openings in his or her field). In terms of their relationship with job search behaviours, focused and exploratory search strategies were positively related to process satisfaction, while the haphazard strategy was negatively related to it (Crossley & Highhouse, 2005). While it is plausible that job search behaviours of effort and intensity influence the job seeker's appraisal of satisfaction with the decision process, extant research has yet to investigate this link.

Decision-Making Anxiety, Job Search Behaviours, and Job Search Outcomes

As reviewed above, job search behaviours are predictive of both objective and subjective job choice outcomes. The study of antecedents of job search behaviours, like decision-making anxiety, allows for a greater understanding of how individual differences can influence job choice outcomes. In the current study, it was expected that decision-making anxiety would lead to poorer job choice outcomes (number of job offers, employment status, satisfaction with the decision-making process), via its relationships with job search effort, intensity, and job search

strategies. These relationships are depicted in Figure 1 and the theorizing on which they are based is expanded upon below.

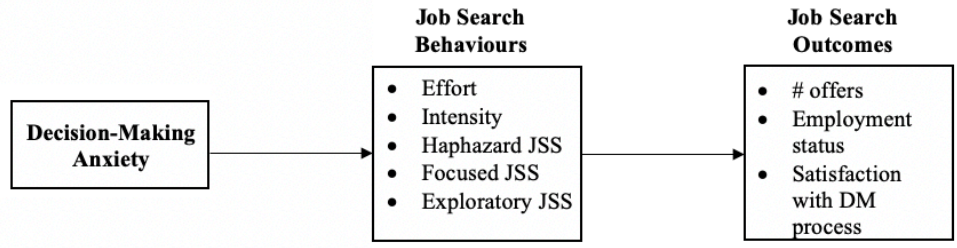

Fig. 1. Theoretical associations among decision-making anxiety, job search behaviours and job search outcomes. *Note.* JSS = Job Search Strategy; DM= Decision-Making.

Incremental Validity. The present study offered the opportunity to further validate the DMAI. More specifically, to examine whether decision-making anxiety demonstrates incremental validity above and beyond general trait anxiety, in the context of job search. Based on the research reviewed in Chapter 1, a narrow approach to measurement is useful in that it often leads to better predictive validity and lower levels of error variance, in comparison to general measures (e.g., Sackett et al., 2017; Wang et al., 2019). Specific to decision-making, the use of scales measuring narrow traits has been recommended as well (Mohammed & Schwall, 2009). As such, the following hypothesis was proposed:

Hypothesis 1: Decision-making anxiety demonstrates an incremental explanation of variance in a) job search effort b) job search intensity c) haphazard search strategy d) focused search strategy, and e) exploratory search strategy, above and beyond general trait anxiety.

Decision-Making Anxiety and Job Search Effort and Intensity. Given the consistent positive link between job search effort and intensity and employment outcomes (van Hooft, et al., 2020), it is important to understand what individual differences might be related to such behaviours. As the job search context consists of a series of decisions, decision-making anxiety is a potentially relevant antecedent. Specifically, it was anticipated that decision-making anxiety

might lead to poorer outcomes through decreased effort and intensity. This relationship was expected for two reasons. First, avoidance is a common reaction to anxiety (Abramowitz et al., 2019; Blakey & Abramowitz, 2020; Carver et al., 1989; Suls & Fletcher, 1985). In the job search literature, negative emotions due to job search difficulties have been linked to avoidance and withdrawal (Barber et al., 1994; van Hoye, 2018), and a reduction in efforts and standards (Bonaccio et al., 2014). For example, in the same qualitative study previously mentioned, one novice job seeker explained her tendency to step back from her job search activities, stating "I hadn't heard back from anybody yet and so it was getting a bit discouraging and so I put the whole job search thing, I wouldn't say to the side, but I wasn't as active as I was in the first month" (Bonaccio et al., 2014, p. 245). Indeed, it appears that an individual's tendency to experience negative emotions has an impact on how they behave during the job search process. Thus, the experience of anxiety specifically might also influence job search behaviours. Decision-making anxiety, in particular, is likely to be pertinent in this context. In the present study, the job search process represents a type of decision-making situation that elicits an emotional response (to varying degrees) from job seekers. Given the link between anxiety and avoidance, it was hypothesized that individuals with a tendency to experience higher levels of decision-making anxiety, when in the job search process, would be less engaged in job search behaviours such as job search effort and job search intensity, likely due to the avoidance patterns noted in the literature (Barber et al., 1994; van Hoye, 2018).

Second, another reason explaining the hypothesized negative relationship between decision-making anxiety and both job search effort and intensity is that the cognitive resources of individuals who experience high levels of decision-making anxiety would likely be devoted to their own thoughts and reactions about the decisions they face (e.g., the worry and emotionality

components of the transactional process model; Spielberger & Vagg, 1995), thereby leaving little room to be fully engaged in the job search process. This is consistent with literature on test anxiety showing that it interferes with the task at hand and has negative consequences on outcomes such as test grades (Bonaccio et al., 2012; Cassady & Johnson, 2001; Hembree, 1988). Applied to decision-making anxiety, it is probable that individuals would be more focused on their reactions to the experience of the many decisions in the job search process, which would hinder their ability to be effortful and engaged in job search behaviours. As reviewed previously, this reduction in effort and intensity would then have a negative relationship with objective job search outcomes (number of offers and employment status; van Hooft et al., 2020; Wanberg et al., 2020) and subjective employment outcomes (employment quality; van Hooft et al., 2020).

Given the arguments above, the following hypotheses are offered:

Hypothesis 2: Decision-making anxiety is negatively related to job search outcomes through decreased job search effort.

Hypothesis 3: Decision-making anxiety is negatively related to job search outcomes through decreased job search intensity.

Decision-Making Anxiety and Job Search Strategies. Decision-making anxiety might also be a relevant antecedent of job search strategies, an area that is understudied (van Hoye, 2018). Accordingly, it was anticipated that decision-making anxiety would make it more likely that job seekers would adopt a haphazard job search strategy. This hypothesis was expected because high levels of decision-making anxiety are likely to lead to an increase in decision-related cognitions (i.e. worry), and in physical reactions (i.e. emotionality), based on the transactional process model (Spielberger & Vagg, 1995). Thus, it is probable that individuals who experience high levels of decision-making anxiety are more focused on their experience of

this anxiety, and not on their job search strategy, leading to a more disorganized approach. More importantly, the experience of anxiety, panic, and psychological distress has been linked to the haphazard search strategy in past research (Bonaccio et al., 2014; De Battisti et al., 2016). Thus, it is probable that individuals experiencing high levels of decision-making anxiety would be overwhelmed by their experience and use this type of strategy in response. The use of this approach has been found to be negatively related with the number of job offers received (Crossley & Highhouse, 2005). It was hypothesized that:

Hypothesis 4: Decision-making anxiety is negatively related to job search outcomes through an increased use of haphazard job search strategy.

As for the remaining two strategies, it was expected that the more decision-making anxiety an individual experiences, the less likely they are to adopt focused and exploratory strategies. Both of these search strategies are planned and deliberate (Crossley & Highhouse, 2005; van Hoye, 2018). Turning again to the transactional process model (Spielberger & Vagg, 1995), individuals who experience high levels of decision-making anxiety are likely to be overwhelmed by their decision-related cognitions, as illustrated by the items "When faced with a decision, I can't seem to focus" and "When faced with a decision, I find it hard to concentrate" from the DMAI. As such, job seekers experiencing high levels of decision-making anxiety would be less likely to have the cognitive clarity to adopt focused and exploratory strategies, given the importance of planning and deliberation for these approaches. Regarding focused search strategy specifically, a recent study has found a negative relationship between work-attributed psychological distress and this search method (De Battisti et al., 2016). Furthermore, novice job seekers who were more likely to use these two strategies used emotion-neutral language when discussing their job search experiences (Bonaccio et al., 2014). Specifically, 56.5% of job

seekers who use the exploratory method produced emotion-neutral accounts, while the proportion for those who adopted a focused strategy was 75% (Bonaccio et al., 2014). Moreover, the assumption is that individuals high in decision-making anxiety are focused on their thoughts and reactions about the decision situation, and not on the task at hand, in this case, job search. As such, the remaining cognitive resources that would be used in planning and deliberation are limited, if not scarce. As reviewed, past studies have shown that the use of focused and exploratory strategies are positively related to the number of job offers received (Crossley & Highhouse, 2005; Koen et al., 2010). As such, it is likely that a reduction in the use of these strategies would lead to poorer outcomes. Thus, it was hypothesized that:

Hypothesis 5: Decision-making anxiety is negatively related to job search outcomes through a decreased use of focused job search strategy.

Hypothesis 6: Decision-making anxiety is negatively related to job search outcomes through a decreased use of exploratory job search strategy.

Method

Participants and Procedure

Participants were recruited using a participant-recruiting firm, Qualtrics, and all data was collected using the Qualtrics Software. In total, 599 participants were recruited for this study. 471 participated only at Time 1, and 128 again two months later, at Time 2. Compensation consisted of a small monetary amount, only known to Qualtrics and the participants, based on their individual response history with the company. These respondents were carefully screened by Qualtrics according to their age (given the focus on emerging adults) and their desire to seek full-time employment prior to starting the survey. Qualtrics further screened out potential participants based on different quality checks: items designed to identify careless responders

(Meade & Craig, 2012), inconsistent answers to reverse- and non-reverse coded items in the focal measure, the DMAI, as well as highly improbable and/or gibberish open-text answers. These participants were excluded from the sample provided by Qualtrics. Sample demographics information is available in Table 4.1. All participants lived in North America, mastered the English language, were aged between 18 and 25 years old, were predominantly female and Caucasian (Time 1 = 59.1%; Time 2 = 53.9%).

Table 4.1

Summary of Gender and Age Demographics

	N	Gender Distribution	Mean Age	Age *SD*
Time 1	599	83.3% female	21.78	2.16
Time 2	128	89.1% female	22.31	2.05

Education and Employment-Related Sample Characteristics for Time 1. Information on education and employment information was collected at Time 1, on 599 participants. Just over half of the sample (55.3%, $N = 331$) was employed at the time of the study. The majority of those employed indicated they had a part-time job (64.7%), and 32% had full-time employment. The remaining participants indicated another type of employment (e.g., casual, internship).

Almost two-thirds of the sample (61.1%, $N = 366$) were not students, although they met the age cut-off of being between 18 and 25. Of these non-students, 60.9% of them listed a high school diploma as their highest degree obtained, 20.5% a Bachelor's degree, 6.3% an Associate's degree, 4.1% a Masters degree, and 2.5% a Doctorate or Professional degree. 5.7% of respondents chose the option "Not Listed," with most responses pertaining to having not completed high school or having completed a certificate. In addition, approximately half of the

participants (54.9%) indicated pursuing employment related to the field of the study of their highest obtained degree.

For the participants who were students (38.9%, $N = 233$), 43.3% were working towards their Bachelor's degree, 22.7% towards an Associate's degree, 17.6% towards a Master's degree, and 12.4 towards a Doctorate or Professional degree. 3.9% of respondents chose the option "Not Listed," with most indicating they were pursuing their high school diploma. Finally, the majority of these respondents (76%) indicated pursuing employment related to their current field of study.

Employment-Related Sample Characteristics for Time 2. Information on employment was also collected at the second time point ($N = 128$). Almost half the sample (47.7%) indicated that they were employed in the sample position as when they answered the measures at Time 1. 29.7% indicated they were unemployed, and almost a quarter (22.7%, $N = 29$) were employed in a new position. Of those 29, 18 participants had accepted a full-time job, and 11 listed their new job as part-time.

Measures for Time 1

Socio-demographic Questionnaire. Participants answered questions about their age, gender, ethnicity, as well as current employment status. The question on gender included "You don't have an option that applies to me; I identify as: [open text box]," allowing for individuals who identify as nonbinary to have an answer choice that reflects their identity.

Decision-Making Anxiety. Decision-Making Anxiety was assessed using the 8-item Decision-Making Anxiety Inventory (DMAI) developed in Study 1. These items are rated on a 7-point scale ranging from 1 (Strongly Disagree) to 7 (Strongly Agree).

Trait Anxiety. Trait Anxiety was measured using the State Trait Anxiety Inventory, Form Y-2 (Spielberger et al., 1983) as in Studies 1 and 2. It contains 20 items on a 4-point scale, ranging from 1 (Not at All) to 4 (Very Much So).

Job Search Intensity. Job search intensity was measured using Saks and Ashforth's (2002) and Côté et al.'s (2006) modification of Blau's (1994) scale. Saks and Ashforth (2002) initially modified the original scale by adding 2 items reflecting the use of the scale amongst recent graduates, while and Côté et al. (2006) added an item on internet use to modernize the scale. The finalized version contains 15 items on various job search behaviours, where participants rate the frequency at which these were performed, on a 5-item scale ranging from 1(Never) to 5 (Frequently). Sample items include "used the internet to locate employment opportunities" (preparatory phase) and "had a job interview with a prospective employer" (active phase). This version of the scale has been found to have good internal consistency (α = .83 and .86 reported in Côté et al., 2006; α = .89 reported in Saks & Ashforth 2002, using 14 items).

Job Search Effort. Job search effort was measured using Blau's (1993) 4-item scale. Items are rated on a 5-point scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). Sample items include "I gave my best effort to find a job" and "I spent a lot of time looking for job opportunities." This measure has been found to have good internal consistency (α = .94; Saks & Ashforth, 2002).

Job Search Strategy. Haphazard, focused, and exploratory search strategies were measured using Crossley and Highhouse's (2005) information search strategy measure. It contains 16 items, measured on a 1 (Strongly Disagree) to 5 (Strongly Agree) scale. Sample items include: "I did not really have a plan when searching for my job" (haphazard), "I gathered information about all possible job opportunities, rather than setting out for something specific"

(exploratory), and "I gathered information only for jobs that I knew I would qualify for" (focused). Analyses showed that the scale loads on three distinct factors, and has appropriate internal consistency (Crossley & Highhouse, 2005). Reliability estimates show that the scale has adequate internal consistency (haphazard $\alpha = .77$, exploratory $\alpha = .70$, focused $\alpha = .64$ from Crossley & Highhouse, 2005; haphazard $\alpha = .59$, exploratory $\alpha = .74$, focused $\alpha = .70$ from Koen et al., 2010).

Measures for Time 2

Number of job offers. Following existing practices in the literature (e.g., Saks et al., 2015; Saks, 2005), participants were asked how many job offers they received.

Employment status. Following existing practices in the literature (Saks, 2005), participants were asked if they have accepted a job offer.

Satisfaction with the decision-making process. Employed participants filled out Crossley and Highhouse's (2005) measure on satisfaction with the decision-making process. It contains 4 items, measured on a 1 (Strongly Disagree) to 5 (Strongly Agree) scale. Sample items include "I am happy with the way I went about finding this job" and "I am satisfied with how I decided upon which job to take." This scale was found to have good internal consistency ($\alpha = .83$). Unemployed participants answered a modified version of the scale to reflect their current employment status (see Appendix D).

Decision-Making Anxiety. Decision-Making Anxiety was re-assessed at Time 2, for test-retest analyses, using the DMAI.

Trait Anxiety. Trait Anxiety also measured again at Time 2, for test-retest analyses, using the State Trait Anxiety Inventory, Form Y-2 (Spielberger et al.,1983).

Results

Data Cleaning

The final sample obtained from Qualtrics was screened for any univariate outliers and multivariate outliers. None were identified. For univariate outliers, no participants were identified as problematic based on their intra-individual response variability scores, and there were no significant issues with skewness and kurtosis. For multivariate outliers, Mahalanobis Distance, Cook's Distance, and Leverage values were calculated (Tabachnick & Fidell, 2013). A conservative approach was adopted, given how rigorously the sample was screened by Qualtrics. As such, only the participants who were identified as problematic based on all three values would be flagged for removal. In this case, no participants met this criterion. Finally, it was confirmed that none of the assumptions of multicollinearity, normality, linearity, and homoschedasticity were violated.

Internal Consistency Assessment

The internal consistency of the DMAI, as well as all other scales included in the study were examined. Results are included in Table 4.2. As in Studies 1 and 2, the 8-item DMAI demonstrates good internal consistency, with a Cronbach's alpha value of .92. Cronbach's alpha values for the other scales ranged from good to acceptable. The values for all three of the Job Search Styles (Haphazard, Exploratory, and Focused), while lower than the rest of the scales, are consistent with the values obtained by the scale's developers (Crossley & Highhouse, 2005).

Test-Retest Reliability

A Pearson correlation between the decision-making anxiety scores at Time 1 and those at Time 2 was conducted to examine test-retest reliability. Results show a significant correlation (r = .73, p = .00), which indicates that the DMAI is adequately reliable (Kaplan & Saccuzzo, 2018)

when administered at a 2-month interval. As a comparison point, the test-retest reliability for the State-Trait Anxiety Inventory scale in the current study was .72, which is consistent with existing values in the literature (r= .65 to .75, when administered at a 2-month interval as well; Spielberger et al., 1983).

Sample Equivalency

Because only 21% of the initial sample agreed to answer the second questionnaire at Time 2, it was important to ascertain that the subsample at Time 2 was equivalent to the sample of only Time 1 respondents. To confirm sample equivalency, independent-samples *t*-tests were conducted on all main variables. The results did not show any significant difference in decision-making anxiety ($t(597) = -1.07$, $p = .29$) experienced by participants who only answered once ($N = 471$, $M = 3.64$, $SD = 1.41$), and participants who answered twice ($N = 128$, $M = 3.79$, $SD = 1.40$, power = 0.99). For the remaining variables, only one *t*-test revealed a significant difference, with participants who completed Time 2 measures ($N = 128$, $M = 4.09$, $SD = 0.72$) experiencing higher levels of job search effort ($t(597) = -2.25$, $p = .03$) than participants who only answered at Time 1 ($N = 471$, $M = 3.91$, $SD = 0.84$). This unanticipated finding might reflect that those who put more effort in their job search are generally more effortful, and thus were also more motivated to remain participants two months after their initial decision to participate in the study, thus following through on their "efforts" to contribute to research. In addition, no significant difference in gender distribution was found between participants who only responded at Time 1, and those who responded to both Time 1 and Time 2 surveys ($\chi^2(3, N = 581) = 3.71, p > .05$, power = 0.99).

Correlations

The pattern of correlations between the different variables are included in Table 4.2, alongside the means and standard deviations. Decision-making anxiety was found to be positively correlated with the following variables: trait anxiety, haphazard style, and gender. To further understand the relationship between the DMAI and gender, an independent-samples *t*-test was conducted. Results confirmed that there was a significant difference between men (N = 82, M = 3.23, SD = 1.36) and women (N = 499, M = 3.73, SD = 1.40) and their scores on the DMAI ($t(579) = -2.97$, $p = .003$). Consequently, gender was controlled for in the main analyses. Furthermore, the correlation results, split by gender, are included in Table 4.3.

In addition, the results indicated that decision-making anxiety is negatively correlated with job search intensity, job search effort, exploratory style, and the number of job offers received. Finally, the results did not demonstrate a relationship between decision-making anxiety and focused style, the number of offers accepted, and satisfaction with the decision-making process. Overall, the pattern of correlations was mostly consistent with expectations.

Table 4.2

Descriptive Statistics and Correlations Results

Variable	*M*	*SD*	1[a]	2[a]	3[a]	4[a]	5[a]	6[a]	7[a]	8[b]	9[b]	10[b]
1. Decision-Making Anxiety	3.67	1.41	(.92)									
2. Trait Anxiety	45.78	12.61	.64***	(.93)								
3. Job Search Intensity	2.75	0.78	-.22***	-.23***	(.89)							
4. Job Search Effort	3.95	0.82	-.25***	-.23***	.52***	(.87)						
5. Haphazard Style	3.02	0.82	.21***	.13**	-.09*	-.13**	(.72)					
6. Exploratory Style	3.83	0.73	-.29***	-.32***	.61***	.66***	-.04	(.82)				
7. Focused Style	3.59	0.68	.03	-.06	.05	.17***	.28***	.18***	(.76)			
8. Number of job offers	2.16	3.38	-.19*	-.28**	.08	-.12	-.06	-.02	-.10	-		
9. Number of offers accepted	0.64	0.84	-.11	-.17	.32***	.04	-.02	.14	-.02	.53***	-	
10. Satisfaction with DM process	3.67	0.86	-.06	-.28**	.32***	.15	-.19*	.25**	-.02	.28**	.39***	(.83;.87)[c]

Note. Cronbach's alpha values are in parentheses. [a] Sample size $N = 599$; [b] Sample size $N=128$; [c] .83 for those employed at the end of the study, .87 for those whose employment status remained unchanged at the end of the study; *$p < .05$; **$p < .01$; ***$p < .001$.

Table 4.3

Correlation Results, by Gender

Variable	1[a]	2[a]	3[a]	4[a]	5[a]	6[a]	7[a]	8[b]	9[b]	10[b]
1. Decision-making Anxiety	-	.65***	-.23***	-.24***	.24***	-.30***	.07	-.22*	-.16	-.14
2. Trait Anxiety	.51***	-	-.20***	-.18***	.13**	-.29***	-.04	-.28**	-.16	-.30***
3. Job Search Intensity	-.20	-.26*	-	.53***	-.08	.61***	.23	.09	.32***	.34***
4. Job Search Effort	-.26*	-.32**	.43***	-	-.12**	.67***	.15***	-.14	-.00	.12
5. Haphazard Style	.18	.18	-.21	-.09	-	-.04	.26***	-.02	-.01	-.16
6. Exploratory Style	-.19	-.40***	.55***	.67***	-.08	-	.16***	-.04	.12	.27**
7. Focused Style	-.05	-.10	.12	.36***	.35***	.35***	-	-.11	-.03	-.03
8. Number of job offers	.11	-.20	-.14	.09	-.46	.25	-.20	-	.54***	.27**
9. Number of offers accepted	.10	-.59	.42	.53	-.28	.59	.61*	.42	-	.37***
10. Satisfaction with DM process	.22	-.26	.13	.27	-.28	.32	.01	.55	.56	-

Note. Results for women ([a]N = 499, [b]N = 114) above the diagonal, results for men ([a]N = 82, [b]N = 11) below the diagonal; *$p \leq .05$; **$p \leq .01$, ***$p \leq .001$.

Incremental Validity

A hierarchical multiple regression was conducted to test the hypothesis that decision-making anxiety would account for incremental variance in the mediator variables over and above trait anxiety (Hypothesis 1). Results are presented in Table 4.4. The first step included a set of dummy codes to control for gender, in the second step trait anxiety, and finally in the last step, decision-making anxiety. Indeed, the results appeared to lend some support for incremental validity for the DMAI, over the STAI. For job search effort, the STAI accounted for approximately 6% of the variance, once gender was controlled for ($R^2 = .06, p < .001$). As for decision-making anxiety, it significantly predicted job search effort over and above the trait anxiety ($b = -0.10, t(594) = -3.43, p = .001; R^2 = .08, \Delta R^2 = .02, F(4,594) = 11.86, p < .001; sr = -.14$). For job search intensity, trait anxiety also accounted for approximately 6% of the variance ($R^2 = .06, p < .001$). Once decision-making anxiety was added to the model, it significantly predicted for the level of intensity above and beyond trait anxiety ($b = -0.07, t(594) = -2.41, p = .016; R^2 = .07, \Delta R^2 = .01, F(4,594) = 10.79, p < .001; sr = -.10$). For haphazard job strategy, trait anxiety accounted for 3% of the variance ($R^2 = .03, p < .001$), while decision-making anxiety added an additional 3% ($b = 0.13, t(594) = 4.15, p < .001; R^2 = .06, \Delta R^2 = .03, F(4,594) = 9.34, p < .001; sr = -.17$). For exploratory job search strategy, trait anxiety accounted for approximately 11% of the variance ($R^2 = .11, p < .001$). Once again, decision-making anxiety significantly predicted the use of this strategy over trait anxiety ($b = -0.08, t(594) = -2.88\ p = .004; R^2 = .12, \Delta R^2 = .01, F(4,594) = 19.95, p < .001; sr = -.11$). Finally, for focused job search strategy, trait anxiety did not account for any significant amount of the variance, when controlling for gender ($R^2 = .01, p = .268$). On the other hand, decision-making anxiety significantly predicted the use of this strategy over trait anxiety, while controlling for gender, accounting for approximately 2% of

the variance ($b = 0.06$, $t(594) = 2.31$ $p = .021$; $R^2 = .02$, $\Delta R^2 = .01$, $F(4,594) = 3.35$, $p = .010$; $sr = -.09$). Overall, there is some tentative evidence that decision-making anxiety appeared to predict job search effort and intensity, and the use of haphazard, focused, and exploratory job search strategies over and above trait anxiety. However, it is important to note that applying a Bonferroni correction ($p = 0.005$) tempers the results for job search intensity, and the exploratory and focused job search strategies. In sum, the results of the hierarchical regression analyses lend some support to Hypothesis 1.

Table 4.4

Incremental Validity Results for Decision-Making Anxiety on Job Search Effort and Intensity, and Job Search Strategies

	Job Search Effort						Job Search Intensity					
	Step 1		Step 2		Step 3		Step 1		Step 2		Step 3	
	b	*se*	*b*	*se*	*b*	*se*	*b*	*se*	*b*	*se*	*b*	*se*
Control variables												
Male	0.11	0.10	0.06	0.10	0.03	0.10	0.21*	0.09	0.16	0.09	0.15	0.09
Other	-0.49*	0.20	-0.39*	0.19	-0.41*	0.19	-0.12	0.19	-0.03	0.18	-0.04	0.18
Predictor variables												
Trait Anxiety			-0.01***	0.00	-0.01*	0.00			-0.01***	0.00	-0.01**	0.00
DM Anxiety					-0.10***	0.03					-0.07*	0.03
R^2	.013*		.058		.076		.010*		.059		.068	
ΔR^2			.045***		.018***				.049***		.009*	

	Haphazard Job Strategy						Exploratory Job Strategy					
	Step 1		Step 2		Step 3		Step 1		Step 2		Step 3	
	b	*se*	*b*	*se*	*b*	*se*	*b*	*se*	*b*	*se*	*b*	*se*
Control variables												
Male	0.25**	0.10	0.29**	0.10	0.32***	0.10	0.18*	0.09	0.11	0.08	0.09	0.08
Other	0.16	0.20	0.09	0.20	0.11	0.19	-0.28	0.18	-0.16	0.17	-0.17	0.17
Predictor variables												
Trait Anxiety			0.01***	0.00	0.00	0.00			-0.02***	0.00	-0.01***	0.00
DM Anxiety					0.13***	0.30					-0.08**	0.03
R^2	.012*		.032		.059		.012*		.106		.118	
ΔR^2			.020***		.027***				.094***		.012**	

Table 4.4 (Continued).

	Focused Job Strategy					
	Step 1		Step 2		Step 3	
	b	*se*	*b*	*se*	*b*	*se*
Control variables						
Male	0.21**	0.08	0.20*	0.08	0.21**	0.08
Other	0.03	0.16	0.05	0.16	0.06	0.16
Predictor variables						
Trait Anxiety			-0.00	0.00	-0.01*	0.00
DM Anxiety					0.06*	0.03
R2	.011*		.013		.022	
Δ*R2*			.002		.009*	

Note. $N = 599$; Gender was dummy coded for analyses given that more than two options were listed for participants and female is the reference group; DM= Decision-Making; *$p \leq .05$; **$p \leq .01$, ***$p \leq .001$; Bonferroni-corrected $p = 0.005$.

Supplementary Analyses

To gain a more in-depth understanding of how decision-making anxiety relates to key job search behaviours, supplementary regression analyses were conducted to examine the relationship between decision-making anxiety and each job search behaviour, using the full Time 1 sample (N = 599). Results are included in Table 4.5. As above, these analyses control for gender. The results indicate that decision-making anxiety was a significant predictor of all job search behaviours, except for focused job search strategy. Specifically, the DMAI was found to be a significant negative predictor of job search effort (b = -0.14, t(595) = -6.05, p = .00, R^2 = .07, F(1,595) =14.94, p = .00), job search intensity (b = -0.12, t(595) = -5.36, p = .00, R^2 = .06, F(1,595) = 11.66, p = .00), and exploratory job search strategy (b = -0.15, t(595) = -7.15, p = .00, R^2 = .09, F(1,595) =19.68, p = .00), as well as a significant positive predictor of haphazard job search strategy (b = 0.13, t(595) = 5.49, p = .00, R^2 = .06, F(1,595) = 12.47, p = .00). As such, these results offer some support to the predicted associations between decision-making anxiety and key job search behaviours known to influence job search success.

Table 4.5

Supplementary Regression Analyses for Decision-Making Anxiety on Job Search Effort and Intensity, and Job Search Strategies

	Job Search Effort				Job Search Intensity				Haphazard Job Strategy			
	Step 1		Step 2		Step 1		Step 2		Step 1		Step 2	
	b	*se*	*b*	*se*	*b*	*se*	*b*	*se*	*b*	*se*	*b*	*se*
Control variables												
Male	0.11	0.10	0.04	0.10	0.21*	0.09	0.16	0.09	0.25**	0.10	0.32***	0.10
Other	-0.49*	0.20	-0.44*	0.19	-0.12	0.19	-0.08	0.18	0.16	0.20	0.11	0.19
Predictor variable												
DM Anxiety			-0.14***	0.02			-0.12***	0.02			0.13***	0.02
R^2	.013*		.070		.010		.056		.012		.059	
ΔR^2			.057***				.046***				.048***	

	Exploratory Job Strategy				Focused Job Search Strategy			
	Step 1		Step 2		Step 1		Step 2	
	b	*se*	*b*	*se*	*b*	*se*	*b*	*se*
Control variables								
Male	0.18*	0.09	0.11	0.08	0.21**	0.08	0.22**	0.08
Other	-0.28	0.18	-0.23	0.17	0.03	0.16	0.03	0.16
Predictor variable								
DM Anxiety			-0.15***	0.02			0.02	0.02
R^2	.012*		.090		.011*		.013	
ΔR^2			.078***				.002	

Note. N = 599. Gender was dummy coded for analyses given that more than two options were listed for participants and female is the reference group; DM= Decision-Making; *$p \leq .05$; **$p \leq .01$, ***$p \leq .001$; Bonferroni-corrected $p = 0.005$.

Mediation analyses

To test the hypotheses that job search effort, job search intensity and the three job search strategies would mediate the relationship between decision-making anxiety and job search outcomes, bootstrapping procedures with 5,000 samples using PROCESS macro Version 3 were used (Model 4, Hayes, 2017). Job search effort and intensity (corresponding to Hypotheses 2 and 3) were modeled as one set of mediators operating in parallel, and the three job search strategies (corresponding to Hypotheses 4-6) were modeled as a second set of mediators operating in parallel. Gender was included as a control variable. These two analyses were repeated for each of the job search outcomes (number of job offers received, number of job offers accepted, and decision-making process satisfaction). Results from the mediation analyses are included in Tables 4.6, 4.7 and 4.8. The sample for the third outcome, decision-making process satisfaction (N = 99), was smaller than the sample for the number of job offers received and accepted (N = 128). Because unemployed participants received a modified version of the measure, the sample was split. However, there were not enough participants at Time 2 who were employed (N = 29) to run analyses on each sample. Thus, the remaining sample consisted only of participants who were unemployed at the end of their job search, or, who chose to remain in their previous employment. Of note, while trait anxiety was not included these analyses, the results do not change if it replaces decision-making anxiety in the mediation models, as shown in Tables 4.9, 4.10 and 4.11.

Number of Job Offers Received. First, of note, the results revealed a total effect of decision-making anxiety on the number of offers received (b = -0.48, SE = 0.22, p = .03). In light of this, the results were examined for the outcome of number of job offers received, with job search effort and intensity as mediators (Hypotheses 2 and 3). Decision-making anxiety was a

marginally significant negative predictor of job search effort (*b*= -0.09, *SE* = 0.05, *p* = .05), and job search effort was a significant negative predictor of the number of offers received (*b* = -0.91, *SE* = 0.44, *p* = .04). However, there was no evidence of mediation, as the bootstrap estimation of the indirect effect was non-significant (*b* = 0.08, *SE* = 0.07, 95% CI [-.01, .25], power = .87). For this specific outcome variable, there was no support for Hypothesis 2.

As for Hypothesis 3, with job search intensity as the mediator, the data showed that while decision-making anxiety was a significant negative predictor of job search intensity (*b*= -0.13, *SE* = 0.04, *p* = .00), the remaining corresponding results were non-significant. Job search intensity was not a significant predictor of the number of offers received (*b* = 0.45, *SE* = 0.46, *p* = .32), and the bootstrap estimation was also non-significant (*b* = -0.06, *SE* = 0.07, 95% CI [-.20, .06]). Thus, the results for this outcome did not support Hypothesis 3.

Regarding the three job search strategies (Hypotheses 4-6), decision-making anxiety was a significant negative predictor of exploratory job search strategy (*b* = -0.16, *SE* = 0.04, *p* = .00), but not for haphazard (*b* = 0.05, *SE* = 0.05, *p* = .35) and focused (*b* = -0.03, *SE* = 0.04, *p* = .54) strategies. All remaining results were non-significant. None of the job search strategies were significant predictors of the number of offers received (haphazard *b* = -0.00, *SE* = 0.38, *p* = .99; exploratory *b* = -0.32, *SE* = 0.48 *p* = .50; focused; *b* = -0.52, *SE* = 0.48, *p* = .28) and all bootstraps estimates were non-significant (haphazard *b* = -0.00, *SE* = 0.04, 95% CI [-.08, .07]; exploratory *b* = 0.05, *SE* = 0.10, 95% CI [-.14, .28]; focused *b* = 0.01, *SE* = 0.03, 95% CI [-.04, .10]). The data did not support Hypotheses 4-6 for this job search outcome.

Employment Status. The results for the outcome of employment status, measured by the number of job offers accepted were examined. It should be noted that some participants accepted more than one job offer. For the first mediator, job search effort, the results did not demonstrate

evidence of mediation (power = .87). Job search effort was not a significant predictor of the number of job offers accepted (b = -0.11, SE = 0.11, p = .32), and the bootstrap estimate was non-significant (b = 0.01, SE = 0.01, 95% CI [-.01, .04]). Thus, for this outcome, Hypothesis 2 was not supported.

With regards to job search intensity, decision-making anxiety was a significant negative predictor of this mediator, as presented in the previous section. For this outcome, the results indicated that job search intensity was a significant positive predictor of the number of job offers accepted (b = 0.40, SE = 0.11, p = .00). In this case, roughly 12% of the variance in this outcome variable was accounted for by the predictors in the model (R^2 = .12). Furthermore, results of the bootstrap estimation were also significant (b = -0.05, SE = 0.03, 95% CI [-.11, -.01]), confirming an indirect effect of job search intensity on the relationship between decision-making anxiety and the number of job offers accepted (cpath b = -.08, p = .15., c'path b = -.03, p = .53) . These results support the hypothesis that job search intensity mediates the relationship between decision-making anxiety and employment status (Hypothesis 3).

For the three job search strategies, the results did not indicate any significant relationships between any of the mediators and the number of job offers accepted (haphazard b = 0.02, SE = 0.09, p = .86; exploratory b = 0.15, SE = 0.12, p = .20; focused b = - 0.06, SE = 0.12, p = .61), and all bootstrap estimates were non-significant (haphazard b = 0.00, SE = 0.01, 95% CI [-.01, .02]; exploratory b = -0.02, SE = 0.02, 95% CI [-.07, .01]; focused b = 0.00, SE = 0.01, 95% CI [-.01, .02]). As such, Hypotheses 4-6 are not supported for this job search outcome.

Satisfaction with the Decision-Making Process. Finally, the results for the third outcome variable, satisfaction with the decision-making process, were examined. The data did not support Hypothesis 2. Indeed, decision-making anxiety was not a significant predictor of job

search effort (b = -0.09, SE = 0.06, p = .11), and job search effort was not a significant predictor of decision-making process satisfaction (b = 0.07, SE = 0.12, p = .58). Bootstrap estimates were also non-significant (b = -0.01, SE = 0.01, 95% CI [-.04, .01], power = .73).

Looking at the second mediator in the model, the results revealed that decision-making anxiety was a significant negative predictor of job search intensity (b = -0.11, SE = 0.05, p = .02). However, job search intensity was not a significant predictor of satisfaction with the decision-making process (b = 0.25, SE = 0.14, p = .07), and bootstrap estimates were non-significant (b = -0.03, SE = 0.02, 95% CI [-.08, .01]). Thus, Hypothesis 3 was not supported for this outcome.

Regarding the three job search strategies, the results did not support evidence of mediation. For Hypothesis 5, decision-making anxiety was found to be a significant negative predictor of exploratory job search strategy (b = -0.16, SE = 0.05, p = .00), and exploratory job search strategy was found to be a significant positive predictor of satisfaction with the decision-making process (b = 0.39, SE= 0.13 p = .00). While the results of the bootstrap estimation were significant (b = -0.06, SE = 0.03, 95% CI [-.12, -.01]), the direct effect of decision-making anxiety on this outcome was not reduced when exploratory job search was included as a mediator (cpath b = -.02, p = .70, c'path b = 0.05, p = .41) For the remaining strategies, haphazard and focused, the data did not reveal any significant results. Both strategies were not significantly predicted by decision-making anxiety (haphazard b = 0.08, SE = 0.06, p = .21; focused b = 0.03, SE = 0.05, p = .57), nor were they predictors of decision-making process satisfaction (haphazard b = -0.15, SE = 0.11, p = .17 focused b = -0.10, SE = 0.14, p = .44). In addition, all bootstrap estimates were non-significant (haphazard b = -0.01, SE = 0.02, 95% CI [-

.05, .02]; focused b = -0.00, SE = .01, 95% CI [-.02, .02]). There is therefore no support for Hypotheses 4 and 6 for this outcome.

In all, the results revealed one significant relationship: job search intensity mediated the relationship between decision-making anxiety and employment status (Hypothesis 3).

Table 4.6

Mediation Results for Job Offers Received

		Consequent										
Antecedent		M_1 (Job Search Effort)				M_2 (Job Search Intensity)				Y (Offers received)		
		b	*SE*	*p*		*b*	*SE*	*p*		*b*	*SE*	*p*
Intercept	iM_1	4.44	.19	.00	iM_2	3.28	.18	.00	iY	6.65	2.21	.00
Male-Dummy Code		-.07	.23	.77		-.13	.22	.56		-.85	1.06	.43
Other-Dummy Code		.05	.42	.90		-.29	.40	.47		-.38	1.95	.84
Decision-Making Anxiety	a_1	-.09	.05	.05	a_2	-.13	.04	.00	c'	-.51	.22	.02
M1 (Job Search Effort)		--	--	--		--	--	--	b_1	.45	.46	.32
M2 (Job Search Intensity)		--	--	--		--	--	--	b_2	-.91	.44	.04
		$R^2 = .03$				$R^2 = .07$				$R^2 = .08$		
		F (3, 124) = 1.30 p = .28				F (3, 124) = 3.23 p = .02				F (5, 122) = 1.99 p = .08		

		Consequent												
Antecedent		M_1 (Haphazard JSS)				M_2 (Exploratory JSS)				M_3 (Focused JSS)			Y (Offers received)		
		b	*SE*	*p*		*b*	*SE*	*p*		*b*	*SE*	*p*	*b*	*SE*	*p*
Intercept	iM_1	2.76	.22	.00	iM_2	4.49	.17	.00	iM_2	3.69	.18	.00	iY 7.42	2.56	.00
Male-Dummy Code		.67	.27	.01		-.05	.21	.82		.32	.22	.14	-.69	1.10	.53
Other-Dummy Code		-.16	.49	.75		.27	.39	.48		-.40	.40	.32	-.68	1.99	.73
Decision-Making Anxiety	a_1	.05	.05	.35	a_2	-.16	.04	.00	a_3	-.03	.04	.54	c' -.55	.23	.02
M1(Haphazard)		--	--	--		--	--	--		--	--	--	b_1 -.00	.38	.99
M2(Exploratory)		--	--	--		--	--	--		--	--	--	b_2 -.32	.48	.50
M3(Focused)		--	--	--		--	--	--		--	--	--	b_3 -.52	.48	.28
		$R^2 = .05$				$R^2 = .10$				$R^2 = .03$			$R^2 = .06$		
		F (3, 124) = 2.29 p = .08				F (3, 124) = 4.67 p = .00				F (3, 124) = 1.39 p = .25			F (6 121) = 1.28 p = .27		

Table 4.7

Mediation Results for Employment Status

		Consequent										
Antecedent		M_1 (Job Search Effort)				M_2 (Job Search Intensity)				Y(Employment Status)		
		b	*SE*	*p*		*b*	*SE*	*p*		*b*	*SE*	*p*
Intercept	iM_1	4.44	.19	.00	iM_2	3.28	.18	.00	iY	.13	.53	.81
Male-Dummy Code		-.07	.23	.77		-.13	.22	.56		-.32	.26	.21
Other-Dummy Code		.05	.42	.90		-.29	.40	.47		-.17	.47	.72
Decision-Making Anxiety	a_1	-.09	.05	.05	a_2	-.13	.04	.00	c'	-.03	.05	.53
M1 (Job Search Effort)		--	--	--		--	--	--	b_1	.40	.11	.00
M2 (Job Search Intensity)		--	--	--		--	--	--	b_2	-.11	.11	.32
		$R^2 = .03$ $F(3, 124) = 1.30$ $p = .28$				$R^2 = .03$ $F(3, 124) = 1.30$ $p = .28$				$R^2 = .12$ $F(5, 122) = 3.47$ $p = .01$		

		Consequent										
Antecedent		M_1 (Haphazard JSS)				M_2 (Exploratory JSS)				M_3 (Focused JSS)				Y (Employment Status)		
		b	*SE*	*p*		*b*	*SE*	*p*		*b*	*SE*	*p*		*b*	*SE*	*p*
Intercept	iM_1	2.76	.22	.00	iM_2	4.49	.17	.00	iM_2	3.69	.18	.00	iY	.46	.64	.47
Male-Dummy Code		.67	.27	.01		-.05	.21	.82		.32	.22	.14		-.35	.28	.21
Other--Dummy Code		-.16	.49	.75		.27	.39	.48		-.40	.40	.32		-.35	.50	.48
Decision-Making Anxiety	a_1	.05	.05	.35	a_2	-.16	.04	.00	a_3	-.03	.04	.54	c'	-.06	.06	.33
M1(Haphazard)		--	--	--		--	--	--		--	--	--	b_1	.02	.09	.86
M2(Exploratory)		--	--	--		--	--	--		--	--	--	b_2	.15	.12	.20
M3(Focused)		--	--	--		--	--	--		--	--	--	b_3	-.06	.12	.61
		$R^2 = .05$ $F(3, 124) = 2.29$ $p = .08$				$R^2 = .10$ $F(3, 124) = 4.67$ $p = .00$				$R^2 = .03$ $F(3, 124) = 1.39$ $p = .25$				$R^2 = .04$ $F(6,121) = 0.92$ $p = .48$		

Table 4.8

Mediation Results for Satisfaction with the Decision-Making Process

Antecedent		Consequent: M_1 (Job Search Effort)				M_2 (Job Search Intensity)				Y (DM Process Satisfaction)		
		b	*SE*	*p*		*b*	*SE*	*p*		*b*	*SE*	*p*
Intercept	iM_1	4.42	.24	.00	iM_2	3.10	.21	.00	iY	2.60	.62	.00
Male-Dummy Code		-.12	.26	.64		-.08	.22	.72		-.16	.28	.56
Other-Dummy Code		-.47	.54	.39		-.42	.47	.38		-.95	.60	.12
Decision-Making Anxiety	a_1	-.09	.06	.11	a_2	-.11	.05	.02	c'	.01	.06	.87
M1 (Job Search Effort)		--	--	--		--	--	--	b_1	.25	.14	.07
M2 (Job Search Intensity)		--	--	--		--	--	--	b_2	.07	.12	.58
		$R^2 = .03$ $F(3, 95) = 1.11 p = .35$				$R^2 = .06$ $F(3, 95) = 2.03\ p = .11$				$R^2 = .08$ $F(5, 93) = 1.71\ p = .14$		

Antecedent		Consequent: M_1 (Haphazard JSS)				M_2 (Exploratory JSS)				M_3 (Focused JSS)				Y (DM Process Satisfaction)		
		b	*SE*	*p*		*b*	*SE*	*p*		*b*	*SE*	*p*		*b*	*SE*	*p*
Intercept	iM_1	2.64	.25	.00	iM_2	4.49	.21	.00	iM_2	3.48	.21	.00	iY	2.67	.71	.00
Male-Dummy Code		.55	.27	.04		-.10	.23	.66		.25	.22	.26		-.04	.28	.87
Other--Dummy Code		.21	.57	.72		.18	.48	.71		.09	.47	.85		-1.12	.58	.06
Decision-Making Anxiety	a_1	.08	.06	.21	a_2	-.16	.05	.00	a_3	.03	.05	.57	c'	.05	.06	.41
M1(Haphazard)		--	--	--		--	--	--		--	--	--	b_1	-.15	.11	.17
M2(Exploratory)		--	--	--		--	--	--		--	--	--	b_2	.39	.13	.00
M3(Focused)		--	--	--		--	--	--		--	--	--	b_3	-.10	.14	.44
		$R^2 = .05$ $F(3, 95) = 1.77\ p = .16$				$R^2 = .10$ $F(3, 95) = 3.53\ p = .02$				$R^2 = .02$ $F(3, 95) = 0.48\ p = .69$				$R^2 = .15$ $F(3, 95) = 2.63\ p = .02$		

Note. $N = 99$. The sample consisted of participants who did not experience a change in their employment status by the end of the study, who answered a modified version of the satisfaction with the decision-making process measure.

Table 4.9

Comparison of Mediation Analyses for Number of Job Offers Received

	Trait Anxiety	Support for Hypothesis	Decision-Making Anxiety	Support for Hypothesis
Job Search Effort	b = 0.01, SE = 0.01, 95% CI [-.005, .017]	No	b = 0.08, SE = 0.07, 95% CI [-.012, .253]	No
Job Search Intensity	b = -0.00, SE = 0.01, 95% CI [-.024, .015]	No	b = -0.06, SE = 0.07, 95% CI [-.201, .063]	No
Haphazard JSS	b = -0.00, SE = 0.00, 95% CI [-.008, .011]	No	b = -0.00, SE = 0.04, 95% CI [-.083, .075]	No
Exploratory JSS	b = 0.01, SE = 0.01, 95% CI [-.014, .038]	No	b = 0.05, SE = 0.10, 95% CI [-.143, .281]	No
Focused JSS	b = 0.00, SE = 0.00, 95% CI [-.003, .012]	No	b = 0.01, SE = 0.03, 95% CI [-.038, .101]	No

Note. N = 128.

Table 4.10

Comparison of Mediation Analyses for Number of Job Offers Accepted

	Trait Anxiety	Support for Hypothesis	Decision-Making Anxiety	Support for Hypothesis
Job Search Effort	b = 0.00, SE = 0.00, 95% CI [-.001, .003]	No	b = 0.01, SE = 0.01, 95% CI [-.009, .039]	No
Job Search Intensity	b = -0.01, SE = 0.00, 95% CI [-.013, -.002]	Yes	b = -0.05, SE = 0.03, 95% CI [-.112, -.011]	Yes
Haphazard JSS	b = 0.00, SE = 0.00, 95% CI [-.002, .002]	No	b = 0.00, SE = 0.01, 95% CI [-.013, .017]	No
Exploratory JSS	b = -0.00, SE = 0.00, 95% CI [-.010, .002]	No	b = -0.02, SE = 0.02, 95% CI [-.066, .007]	No
Focused JSS	b = 0.00, SE = 0.00, 95% CI [-.001, .002]	No	b = 0.00, SE = 0.01, 95% CI [-.010, .020]	No

Note. N = 128.

Table 4.11

Comparison of Mediation Analyses for Satisfaction with the Decision-Making Process

	Trait Anxiety	Support for Hypothesis	Decision-Making Anxiety	Support for Hypothesis
Job Search Effort	b = -0.00, SE = 0.00, 95% CI [-.003, .001]	No	b = -0.01, SE = 0.01, 95% CI [-.045, .014]	No
Job Search Intensity	b = -0.00, SE = 0.00, 95% CI [-.008, .002]	No	b = -0.03, SE= 0.02, 95% CI [-.080, .010]	No
Haphazard JSS	b = 0.00, SE = 0.00, 95% CI [-.006, .002]	No	b = -0.01, SE = 0.02, 95% CI [-.056, .017]	No
Exploratory JSS	b = -0.01, SE = 0.00, 95% CI [-.011, -.000]	No[a]	b = -0.06, SE = 0.03, 95% CI [-.120, -.014]	No[b]
Focused JSS	b = 0.00, SE = 0.00, 95% CI [-.001, .002]	No	b = -0.00, SE = .01, 95% CI [-.024, .018]	No

Note. $N = 99$; [a] While the results of the bootstrap estimation were significant, results of the c'path (b = -0.02, SE = 0.01, p =. 03) do not provide support for the hypothesis; [b] While the results of the bootstrap estimation were significant, the direct effect of decision-making anxiety on this outcome was not reduced when exploratory job search was included as a mediator, as such, there is no support for the hypothesis.

Discussion

The complex nature of the job search process not only involves multiple decisions along the way, but is often experienced by job seekers as anxiety-provoking (van Hooft et al., 2020; Wanberg et al., 2020). This context provided an opportunity to further investigate the relationship between decision-making anxiety and trait anxiety, and more specifically to examine whether it demonstrated an incremental explanation of variance on the five target variables, above and beyond general trait anxiety. The results of the hierarchical regression analyses lend some support to the hypothesis that decision-making anxiety is a unique predictor of the job search behaviours of interest in this study (job search intensity and effort, and focused, haphazard and exploratory job search strategies), over and above general trait anxiety, and after controlling for gender. Of note, the findings pertaining to job search intensity as well as the exploratory and focused job search strategies should be interpreted with caution, given that they become non-significant when taking into account the Bonferroni correction.

Nevertheless, the results add to the validation of the DMAI, tentatively suggesting the possible presence of incremental validity. As for interpretation, there is no golden standard used to identify what constitutes sufficient incremental validity (Clark and Watson, 2019; Hunsley and Meyer, 2003). However, as per Hunsley and Meyer (2003), it is possible to use the semipartial correlation values, which can be interpreted using Cohen's (1992) guidelines, where $r = .10$ is the lower bound value for a small effect size, .30 for moderate and .50 for large. Using these values, decision-making anxiety accounts for a small effect size, with values ranging from |.10 to .17|. For focused job search strategy, the value fell just short of the cutoff ($sr = -.09$).

In addition, results of the test-retest reliability of the DMAI show that it is adequately reliable (Kaplan & Saccuzzo, 2018) when administered at a two-month interval, and in line with

the test-retest values obtained for the long-established STAI (Spielberger et al., 1983). Taken together, these results suggest there may be some merit to using the DMAI as a contextualized measure of anxiety rather than a more general measure of anxiety when the focus of the study is decision-making. This approach would be consistent with Mohammed and Schwall's (2009) recommendation for the use of measures of narrow traits (vs. broad traits) when conducting research on decision-making.

The primary objective of the study was to explore whether and how decision-making anxiety relates to the job search process. It was hypothesized that decision-making anxiety would lead to poorer job choice outcomes (number of job offers, employment status, satisfaction with the decision-making process), via its relationships with job search effort, intensity, and job search strategies. The results of the main and supplementary analyses showed partial support for this overarching hypothesis. More specifically, mediation analyses testing whether decision-making anxiety related to poor job search outcomes through decreased job search effort and job search intensity indicated that only the model for job search intensity was significant. It appeared that job search intensity mediated the relationship between decision-making anxiety and the number of job offers accepted. While there was little support for mediation relationships, the data consistently demonstrated that decision-making anxiety was a predictor of these two important job search behaviours, as also revealed in the supplementary analyses. In other words, it appears that individuals who experienced high levels of decision-making anxiety were more likely to be less engaged, in terms of effort and intensity, in their job search.

Overall, the negative relationship between decision-making anxiety and job search behaviours of effort and intensity was anticipated for two reasons. First, both the broader anxiety literature and the job search literature indicate that anxiety and negative emotions may lead to

avoidance (Barber et al., 1994; Blakey & Abramowitz, 2020; Carver et al., 1989; Suls & Fletcher, 1985; van Hoye, 2018), and reduced efforts and standards (Bonaccio et al., 2014). Thus, when involved in the job search process, it was expected that individuals who experience high levels of decision-making anxiety might be overall less engaged in job search behaviours (such as effort devoted to, and intensity of, search), because of avoidance. Secondly, turning to the transactional process model (Spielberger & Vagg, 1995), it was expected that individuals who experience higher levels of decision-making anxiety might be primarily focused on their reactions to the job search process, which could potentially hinder their ability to be effortful and fully engaged in job search behaviours. Nonetheless, it was disappointing that these job search behaviours did not mediate the relationship between decision-making anxiety and the number of job offers received and accepted. Indeed, the positive relationship between job search effort and intensity, and the number of job offers received is well demonstrated in the literature (Côté et al., 2006; Kanfer et al., 2001; Saks, 2005; Saks & Ashforth, 2000; Wanberg, et al., 2020). It seems that while decision-making anxiety is a relevant predictor of job search behaviours, its indirect relationship with more distal job search outcomes is still unclear.

In addition, neither effort nor intensity mediated the relationship between decision-making anxiety and satisfaction with the decision-making process. Because this outcome is subjective, it is possible that while the job search process is anxiety-provoking for some individuals, they do not perceive their actual level of engagement in job search behaviours as particularly good or bad. The relationship between job search behaviours (effort and intensity) and satisfaction with the decision-making process is not often studied. Past research has found that both focused and exploratory strategies were positively linked to process satisfaction, and haphazard strategy being negatively related (Crossley & Highhouse, 2005). Thus, it might be that

for this outcome variable, how an individual approaches the job search is most important, regardless of the amount of effort and intensity they put into it. More research including satisfaction with the decision-making process is needed in order to better understand what variables might influence this outcome.

Finally, the analyses examined whether decision-making anxiety would lead to poorer job search outcomes through the type of job search strategy used: haphazard, focused, and exploratory. While the mediation analyses were all non-significant, the results from main and supplementary analyses showed a consistent negative relationship between decision-making anxiety and exploratory job search strategy. This finding was expected. Given that the exploratory approach is considered to be planned and deliberate (Crossley & Highhouse, 2005), it was anticipated that individuals who experience high levels of decision-making anxiety would be less likely to adopt an exploratory job search strategy. It may be that job seekers were focused on their reactions and cognitions relating to the decision-making process (as per the Transactional Process Model; Spielberger & Vagg, 1995), instead of thinking about planning their strategy. Given the similarities in planning and deliberation involved in the focused job search style, it was also hypothesized that this approach would also be negatively related to decision-making anxiety, in both the main and supplementary analyses. However, this was not the case. Decision-making anxiety was not significantly related to focused job search style. More work is needed to understand this unexpected finding. Interestingly, focused and exploratory job search strategies, while similar, also do not predict job satisfaction in the same way (Crossley & Highhouse, 2005), with only focused strategy being a significant predictor. It is possible that their relationship to decision-making anxiety is also substantially different. Turning to haphazard job search strategy, results from the main and supplementary analyses showed a significant

positive relationship between decision-making anxiety and this style, as expected. Based on the transactional process model (Spielberger & Vagg, 1995), it had been anticipated that individuals who experience high levels of decision-making anxiety would be more focused on their own experience instead of their job search strategy, and as such, adopt a more disorganized approach. This hypothesis was supported by existing literature that linked anxiety, panic, and psychological distress to the use of the haphazard search strategy (Bonaccio et al., 2014; De Battisti et al., 2016). Overall, the absence of support for the majority of elements in Hypotheses 4-5-6 indicate that more research is needed to understand whether decision-making anxiety is a significant variable of interest when examining job search strategies and subsequent outcomes.

To summarize, while the results linking decision-making anxiety to job search behaviours and strategies were consistent and in line with expectations, the results linking decision-making anxiety to distal job search outcomes as mediated by job search behaviours were not. It may be that decision-making anxiety is a better predictor of proximal behaviours, that are entirely under the control of the job seeker. This finding is important because as previously discussed, the job search context has two distinct decision processes: the information search process and the choice process (Crossley & Highhouse, 2005). The former consists of how an individual gathers the information needed for their subsequent decisions. The latter refers to how an individual weighs and analyzes information leading to their final decision, such as accepting a job offer. While it is possible that other factors beyond an individual's control may play a role in the final choice made, the results of the present study consistently demonstrate a significant influence of decision-making anxiety on the information search process. Individuals who experience higher levels of decision-making anxiety demonstrate less effort and intensity in their job search, and are more prone to suboptimal job search strategies. In other words, decision-making anxiety

appears to interfere with the decision-making process that precedes the ultimate decision to end one's job search by accepting or rejecting a job offer.

Finally, the pattern of correlations also revealed a positive relationship between decision-making anxiety and gender, replicating results from Study 1 and Study 2. Thus, it appears that there are gender differences in how individuals experience decision-making anxiety. This result is not entirely unexpected. In terms of the broader decision-making literature, evidence of gender differences is mixed (Hamilton et al., 2016; Levin et al., 2020; Loo, 2000; Schwartz et al., 2002; Soane & Nicholson, 2008). However, in the anxiety literature, much research has found that women are more likely to experience anxiety, in clinical and non-clinical populations (APA, 2013; Armstrong & Khawaja, 2002; Grant & Odlaug, 2015; Stein & Vythilingum 2015).

Strengths, limitations, and future research

Some features of the present study's design can be noted as strengths. Because job search is a dynamic process which varies over time (Wanberg et al., 2020), having two different measurement time points allowed for the ability to move beyond the use of a retrospective or cross-sectional design, both of which are often used in job search studies (Bulfone et al., 2018; Wang & Yan, 2018; see also Jiang et al., 2019 for a review). Moreover, the sample of job seekers surveyed had varying educational backgrounds, and included both students and non-students.

Nevertheless, the results of the current study should be examined while taking into account its limitations. First, while having two time points is a strength, there were problems with attrition at Time 2, leading to oversampling at Time 1. Moreover, the measures were entirely self-report, which could still lead to issues relating to common-method variance (Podsakoff et al., 2003; Podsakoff et al., 2012). Second, it is important to consider that the

sample consisted of young adults, aged 18 to 25. Past research both in the decision-making literature and the job search literature have found differences related to age, for example, in terms of decision-making competence (Bruine de Bruin et al., 2012), and the number of job offers received (Wanberg et al., 2016). As such, further studies need to include participants older than 25 to investigate the dynamic of decision-making anxiety and job search behaviours and outcomes across different age groups and, consequently, career stages. In addition, with respect to external validity, it is important to also acknowledge that the sample used in this study was comprised of mostly Caucasian females. Thus, caution is required when extending these results to other groups.

Moving forward, the results of the current study lay the groundwork for interesting avenues of future research. First, while it was hypothesized that the transactional process model (Spielberger & Vagg, 1995) could be the underlying mechanism in decision-making anxiety, this study was not intended to provide a formal test of this model. Yet, the literature on test anxiety, another situation-specific trait, has shown that test anxiety influences test-takers' experiences in testing situations (Bonaccio et al., 2012; Cassady & Johnson, 2001; Hembree, 1988; Sarason, 1972; Spielberger et al., 1978; von der Embse et al., 2018). Extending this idea to the decision-making and job search context, future studies should investigate whether the transactional process model also applies to decision-making anxiety. For example, participants could be asked to make job search related decisions in laboratory setting, which would allow for objective measures of job search behaviours and strategies, such as time spent on job posting, patterns of information search relative to the type of postings presented, or effort placed in revising their résumé and cover letter to tailor them to specific job postings. Immediately after, they could then be asked about their cognitive and affective reactions (the worry and emotionality components of

the model) in response to making those decisions. Similarly, physiological measures (such as heart rate) could be used to augment the self-report data.

Another possible future direction would be to examine, in greater detail, the temporal nature of the job search process, to better understand how an individual difference such as decision-making anxiety is particularly relevant. In their recent review, Song and colleagues (2018) encourage researchers to treat job search as behavioural episodes which have precise goals, and are time-limited. They contend that current research practices of examining behaviours over a lengthy time period are imprecise and thus might lead to missing important information about the job search process. As such, they suggest "reports of daily job-search events and the affect associated with those events across several consecutive days" (Song et al., 2018, p.425). The present study showed a relationship between decision-making anxiety, and job search behaviours and strategies. However, the results of the mediation analyses were unexpected, and the impact of decision-making anxiety on distal job search outcomes is still unclear. Future studies using a daily diary approach could be advantageous for two reasons: they could lead to further insight on decision-making anxiety as an antecedent to job search behaviours and strategies, and they might capture more information regarding what processes influence the more distal job search outcomes.

Finally, future research should include the measurement of contextual factors that could influence the job search process. For example, in their recent review, Wanberg and colleagues (2020) highlight that socioeconomic status is a variable that is rarely included when studying job seekers. However, it could be an important factor to consider. Decisions made during the job search process could be perceived as more high-stakes if the person is in a precarious situation. As such, including socioeconomic status and subsequently controlling for it would not only add

to the current literature, it would also eliminate a potentially confounding factor relevant to the job search process.

In conclusion, this study provides evidence that decision-making anxiety is related to job search behaviours, namely job search intensity and effort, and job search strategies. High levels of decision-making anxiety lead to less effort and intensity in the job search, and to the use of suboptimal job search strategies, in particular using a haphazard approach, and being less likely to adopt an exploratory strategy. This ultimately impacts an individual's information search, seemingly affecting the decision-making process that leads to the ultimate choice of accepting a job offer.

Chapter V. General Discussion

General Discussion

Decision-making is a common life experience, and accordingly has been a popular research topic. Despite this popularity, individual differences and how they relate to the decision-making process have received substantially less attention in the literature (Hamilton et al., 2016; Mohammed & Schwall, 2009; Siebert et al., 2020; Weller et al., 2018). In general, the study of individual differences is important, as they represent "enduring psychological features that contribute to the shaping of behavior and to each individual's sense of self" (McCrae, 2007, p.472). This dissertation focused on a specific individual difference in decision-making: decision-making anxiety. Three studies showcase the potential behavioural consequences of decision-making anxiety within the decision-making process, and provide insights on how anxious decision-makers might perceive themselves. Below, the main objectives and findings of this dissertation will be reviewed, followed by a discussion on its limitations. Then, an examination of its contributions and implications is presented, before closing the chapter with potential future areas of research.

Summary of Objectives and Findings

The primary objectives of this dissertation were to introduce the construct of decision-making anxiety, develop a measure of decision-making anxiety, and subsequently use it in two studies in order to examine the role of decision-making anxiety in the decision-making process. All studies focused on a specific category of decision-makers: young adults, a demographic group increasingly known in the literature by the term "emerging adults" (Arnett, 2015; Conley et al., 2020; Gao et al., 2020). Emerging adulthood is theorized as a distinct developmental period characterized by exploration and uncertainty, and accordingly, emerging adults engage in

numerous decisions. It thus provided a rich and interesting segment of the population to study decision-making anxiety.

At the outset, the first research question focused on exploring the conceptualization of decision-making anxiety. As reviewed in the introduction, the existing decision-making literature has examined anxiety from three distinct perspectives: as a general trait, as an incidental state, and as a behavioural style. What was missing is a focus on anxiety that stems directly from being involved in the decision-making process, particularly from a situation-specific trait approach. Situation-specific traits encompass the stable manner in which a person responds to a particular context (Zeidner, 1998; Zeidner & Matthews, 2018; Ziegler et al., 2019). This approach reflects the hierarchical nature of personality, in which specific, contextualized traits are nested below broad, general traits, the latter representing the highest level (Wang & Bowling, 2016). The situation-specific conceptualization of decision-making anxiety also differs from state anxiety, which corresponds to an individual's level of anxiety experienced in a given moment (Spielberger & Vagg, 1995). Moreover, this perspective is different from a decision-making style, which refers to the patterns of behaviours individuals use when making decisions (Scott & Bruce, 1995).

Based on the focus provided by the situation-specific trait approach, and the need to look at narrow conceptualizations of anxiety, other domains that have already adopted this perspective were examined to guide the elaboration of a definition. In particular, test anxiety proved to be a particularly useful literature to guide the process of defining decision-making anxiety as a narrow form of general trait anxiety. Indeed, test anxiety is a well-defined and vastly studied situation-specific representation of the anxiety stemming from test taking. Within this domain, Spielberger and Vagg (1995) introduced the two-component transactional process model. The

first component, worry, relates to individuals' cognitions about the test and/or about themselves. The second component, emotionality, refers to individuals' affective responses to the testing situation (Spielberger, & Vagg, 1995). Similar to test anxiety, it was proposed that decision-making anxiety would be a situation-specific trait. The three dissertation studies allowed for the testing of this conceptualization and solidify the definition of this contextualized form of anxiety. In all, decision-making anxiety is defined as the anxiety that stems from the specific situation of decision-making, and varies from one person to another. It is the extent to which an individual has a tendency to experience anxiety when faced with a choice. In other words, the specific situation of decision-making acts as an anxiety-provoking cue (Barlow, 2002), and the propensity to experience such anxiety varies from one individual to another, in the manner of a personality trait. In addition, it was also speculated that the transactional process model (Spielberger, & Vagg, 1995) would also be relevant to understanding decision-making anxiety. The first chapter contained a series of three studies (Study 1a, 1b, and 1c) that allowed for the establishment of the construct space of decision-making anxiety, as well as answer the second research question, that is, how can decision-making anxiety be measured.

To measure the situation-specific trait of decision-making anxiety, the Decision-Making Anxiety Inventory (DMAI) was developed. It consists of 8 items, rated on a 7-point Likert scale ranging from 1 (Strongly Disagree) to 7 (Strongly Agree). Study 1 was comprised of two phases: initial scale development and refinement (Studies 1a and 1b), and scale validation (Study 1c). Study 1a consisted of item generation and testing of the preliminary 40-item version of the DMAI. Results of the exploratory factor analysis guided the deletion of 21 items. The 19-item version of the DMAI was further investigated in Study 1b, to gain a better understanding of the underlying factor structure, and to finalize the measure. Results from the second EFA,

conducted in Study 1b highlighted the presence of a three-factor model of decision-making anxiety. The first factor that emerged corresponds to the anxious state that the individual is experiencing from being involved in the decision-making situation, in other words, situation-specific anxiety. The other two factors demonstrate the presence of worry (i.e. cognitive interference) and emotionality (i.e. bodily tension), in line with the test anxiety literature situation (Spielberger & Vagg, 1995; Zeidner, 1998). Then, in Study 1c, the possibility that decision-making anxiety is a superordinate construct (Wright et al., 2012), best understood by the interrelations of its three dimensions of anxiety, worry, and emotionality, was investigated. Results from the hierarchical confirmatory factor analysis support this conceptualization, and the appropriateness of using the overall DMAI score to measure an individual's tendency to experience decision-making anxiety.

In addition, decision-making anxiety was situated alongside relevant decision-making and personality variables, to examine convergent and discriminant validity. Specifically, its relationships with the following constructs were examined: decision-making styles (rational, intuitive, avoidant, dependent, and spontaneous; Scott & Bruce, 1995), regret (Schwartz et al., 2002), indecisiveness (Rassin et al., 2007), the anxious subscale of the Decision Styles Questionnaire (Dewberry et al., 2013), trait anxiety (Spielberger et al., 1983), the Big 5 personality factors (Donnellan et al., 2006), and gender. The pattern of correlations obtained was mostly as expected, and it allowed building of decision-making anxiety's nomological net. Most importantly, results from Study 1c confirmed that decision-making anxiety is conceptually distinct from similar existing constructs. Despite expected correlations with other measures, all coefficients obtained were below the suggested lower bound cut off of $r=.85$ (Clark & Watson, 1995; Carlson & Herdman, 2012), demonstrating that the DMAI is non-equivalent to the

measures it converges with. In addition, the DMAI was further validated in Studies 2 and 3, with the inclusion of a measure of trait anxiety, the State-Trait Anxiety Inventory (STAI; Spielberger et al., 1983). It was important to examine the DMAI alongside the STAI, given that decision-making anxiety was elaborated as a specific, contextualized form general trait anxiety. Results from Study 2 suggested that the DMAI behaved differently from the STAI, and showed some partial support for incremental validity. For Study 3, the results revealed additional support for the DMAI's validity. Indeed, results showed a significant positive large correlation between scores obtained at Time 1 and Time 2, allowing to confirm that the DMAI has adequate test-retest reliability when administered at a 2-month interval. The results also suggested construct non-equivalence for a third time. In addition, the findings offered some tentative support for incremental validity, in that the DMAI seemed to account for variance over and above the STAI for all behavioural variables of interest included in the study. These results, however, should be considered in light of the Bonferroni correction, which tempers the findings for three of the study variables. Finally, the data across all samples confirmed that the 8-item DMAI has good internal consistency, with Cronbach's alpha values ranging from .89 (Studies 1c and 2) to .92 (Study 3). Taken together, all three studies in the present dissertation helped define decision-making anxiety as a situation-specific trait, and establish that the DMAI is a useful measure of this narrow approach to the study of anxiety in decision-making.

The final research question of this dissertation pertained to understanding the role of decision-making anxiety in the decision-making process. This question was first answered in Study 2, by exploring the relationships between decision-making anxiety and other existing constructs in the decision-making literature: objective and perceived decision-making competence, as well as perceived decision quality. Results of this study revealed that individuals

who experience high levels of decision-making anxiety perceive themselves as poor decision-makers who do not make quality decisions. However, the results obtained from the Adult Decision-Making Competence tool (A-DMC; Bruin de Bruine et al., 2007), a measure of objective decision-making competence, do not support this perception. Decision-making anxiety was not a significant negative predictor of overall decision-making competence, nor of the four A-DMC tasks administered. Exploratory data from 19 peer-raters also did not provide support for the focal participants' personal account of their decision-making skills. Taken together, these findings suggest the possibility of a discrepancy between objective and subjective indicators of decision-making competence and decision quality. In other words, individuals who experience high levels of decision-making anxiety believe they are not competent decision-makers, and report experiencing bad decision outcomes, despite evidence that they objectively are no worse off in terms of actual skills than their less anxious counterparts. The results from Study 2 help provide insights into how decision-making anxiety plays a role in the decision-making process. That is, decision-making anxiety might impact one's perceptions about their skills, and their subjective experience of the consequences of their decisions.

To further investigate the potential impact of decision-making anxiety on the decision-making process, the role of decision-making anxiety in the job search process was explored. Specifically, Study 3 examined whether decision-making anxiety led to poorer job choice outcomes, via its relationship with job search behaviours. As in Studies 1 and 2, participants for this study were young adults. Participants answered questionnaires at two time points, two months a part. Results from this study highlighted that decision-making anxiety is a significant negative predictor of job search behaviours and strategies, specifically, job search effort and intensity, as well as the exploratory job search strategy. It is also a significant positive predictor

of the haphazard job search strategy. Concretely, this means that individuals who experience higher levels of decision-making anxiety are more likely to adopt suboptimal job-related behaviours. However, the findings for the impact of decision-making anxiety on more distal job search outcomes, like the number of job offers received, employment status, and satisfaction with the decision-making process were not consistent with expected hypotheses. The only significant finding obtained was that job search intensity mediates the relationship between decision-making anxiety and employment status. Overall, the results of this final study suggest that decision-making anxiety is a better predictor of proximal behaviours, which are under the control of the job seeker. Indeed, the more distal outcomes of job search decisions are much less in the hands of the individual, and are likely to be influenced by external factors. For example, employment status at the end of a job search (i.e. accepting a job offer) can impacted by a sudden organizational change at the potential employer with whom the job seeker had engaged in the selection process. Furthermore, the findings obtained in Study 3 are in line with the notion of the job search context having two distinct decision processes, the information search process and the choice process (Crossley & Highhouse, 2005). Information search refers to how a person gathers the information required for subsequent decisions, while the choice process consists of how an individual utilizes and organizes this information, ultimately leading to their final choice. Thus, it appears that decision-making anxiety might influence the information search process, that is, the behaviours that precede the ultimate choice of accepting (or rejecting) a job offer.

Together, the findings from Studies 2 and 3 provide evidence that decision-making anxiety is indeed a relevant individual difference in decision-making, which seems to have consequences on certain parts of the decision-making process. While anxious decision-makers might not differ in their underlying decision-making skills, nor in their ability to receive and

accept job offers, they do perceive themselves as less competent decision-makers, and report experiencing poor decision outcomes. In the specific context of job search, they also are more likely to behave in a suboptimal way, by being less engaged and effortful, and by adopting less helpful job search strategies. Thus, the role of decision-making anxiety appears to be relevant for the overall subjective experience of the decision-maker, and for proximal decision-related behaviours. In a similar vein, when examining convergent and discriminant validity in Study 1, a measure of decision-making style was included, which assesses an individual's habitual pattern of behaviour when making decisions (Scott & Bruce, 1995). Results from the correlation analyses revealed significant positive relationships between decision-making anxiety and two styles: avoidant and dependent decision-making styles. These findings suggest that anxious decision-makers are more likely to attempt to avoid making decisions (avoidant style), and to consult others to receive recommendations on how to decide (dependent style). It seems appropriate to consider these findings in light of the results obtained in Studies 2 and 3. It appears that individuals who experience higher levels of decision-making anxiety might view themselves as poorer decision-makers, which might lead them to be more inclined to seek the opinions of others (perhaps because they do not believe in their abilities), to be less engaged and effortful in the decision-making process (e.g., by avoiding making decisions; by exhibiting less job search effort and intensity), and to adopt suboptimal strategies (e.g., by overutilizing a haphazard job search approach). Ultimately, this might precipitate and perpetuate the subjective experience of making subpar decisions, which then reinforces their perception that they are less competent decision-makers.

Finally, an incidental finding of all three research studies emerged: there appears to be gender-related differences in the experience of decision-making anxiety. Specifically, the women

in all the samples reported significantly higher scores on the DMAI than men. This pattern is similar to clinical and non-clinical forms of anxiety, in which research has demonstrated that women are more afflicted than men (APA, 2013; Armstrong & Khawaja, 2002; Grant & Odlaug, 2015; Stein & Vythilingum 2015). This finding is interesting when examined in the broader context of decision-making research. As previously reviewed, gender has rarely been a variable of interest in this literature, which is not surprising given the sustained lack of emphasis on individual differences in decision-making (Hamilton et al., 2016; Mohammed & Schwall, 2009; Siebert et al., 2020; Weller et al., 2018). In the studies that do examine individual differences, analyses on gender differences are rarely included, leading to limited data on the role of gender in the decision-making literature. When gender has been included as a variable of interest, evidence of its impact on decision-making processes and outcomes is mixed (Hamilton et al., 2016; Levin et al., 2020; Loo, 2000; Schwartz et al., 2002; Soane & Nicholson, 2008). As such, results from this dissertation suggest it might be pertinent to continue to investigate gender differences in decision-making. Some suggestions for future studies are offered below.

Limitations

The findings of the present dissertation should be considered by taking into account its limitations. First, the cross-sectional nature of Studies 1 and 2, and of some of the results of Study 3 (e.g., supplemental analyses) limits the ability to make causal inferences about the data obtained. The use of self-report measures also opens the door to the possibility of common-method variance bias (Podsakoff et al., 2003; Podsakoff et al., 2012).

Second, it is important to acknowledge the attrition problem that occurred in both Studies 2 and 3. For Study 2, peer referral and subsequent peer response were very low, leading to only 19 pairs of participants providing useable data, severely limiting the type and scope of analyses

conducted, and the interpretability of the peer results. For Study 3, response to the second questionnaire 2 months after the initial administration was also low, leading to oversampling at Time 1 in order to mitigate attrition.

Third, it is also important to note the limitations with regards to the regression analyses in Study 2 and Study 3. Indeed, for both studies, the amount of variance explained by the DMAI is small, signaling the need to interpret the findings with caution. The findings could suggest that decision-making anxiety is one of many factors that influence perceived decision-making competence and quality, and job search behaviours. Future research could examine decision-making anxiety alongside other decision-making individual differences to further understand the meaningfulness of its effect size. In addition, numerous regressions were conducted at the same time, requiring the use of Bonferroni corrections to mitigate this issue. Future studies could focus on the relationship between decision-making anxiety and a single decision outcome, for example, satisfaction with the decision-making process.

Fourth, while emerging adulthood served as a rich backdrop to study decision-making anxiety, it also limits the generalizability of the results obtained. As previously discussed, the existing literature, both in decision-making competence and job search, has identified significant age-related differences. For example, older adults appear to experience a significant decline in performance on two tasks of the Adult Decision-Making Competence instrument (Bruine de Bruin et al., 2012). Relating to job search, results from a recent meta-analysis demonstrate the presence of a significant negative relationship between age and reemployment status (Wanberg et al., 2016). Furthermore, research on emotions in decision-making have also highlighted age differences. A recent review on aging in decision-making suggests that older adults appear to be better able to handle emotional challenges, compared to younger adults (Löckenhoff, 2018). In

another study, the results revealed that older adults experiences fewer negative emotions about their financial decisions (Eberhardt et al., 2019). However, as above, decision-making anxiety is conceptualized as a situation-specific trait. As such, it is anticipated that it will remain relatively stable throughout life. The personality literature lends support for this hypothesis of stability, with past research demonstrating that the relationship between the Big 5 personality traits, and positive and negative affect is stable over the lifespan (Wilson & Gullone, 1999). In all, it is important to keep the demographics of the sample in mind when considering the results of the present dissertation. Further research is needed to understand the role of decision-making anxiety in those older than 25.

Finally, the demographic characteristics of all the samples in this dissertation also represents a limitation with respect to external validity. Indeed, participants were mostly Caucasian females from North America. For studies 1 and 2, respondents were university students. As such, caution should be taken when generalizing the findings of this dissertation to other groups.

Contributions and Implications

First, the present dissertation contributes to the anxiety in decision-making literature. Past studies including an anxiety component have used three approaches: a general trait anxiety perspective, an incidental (i.e. non decision-related) state anxiety perspective, and a behavioural style perspective. Furthermore, it appears that anxiety as a construct in this area of research is still poorly defined, as highlighted in a recent meta-analysis on the influence of fear in risk-taking (Wake et al., 2020). The authors make note that fear and anxiety are often used interchangeably in the existing risky decision-making literature, despite being distinct constructs (Abramowitz et al., 2019; Barlow, 2002; LaBar, 2016; Öhman, 2008). In all, very few studies

have showed an interest in a more specific type of anxiety that stems directly from having to make a decision. Given past research focus, prior to this dissertation, no formal definition of decision-making anxiety existed, and consequently, there was no inventory available to measure this construct. The findings of all three studies highlight that decision-making anxiety is indeed a meaningful construct in the decision-making realm, and that it is best conceptualized as a situation-specific trait that reflects an individual's tendency to experience anxiety, worry, and emotionality when faced with a decision. Furthermore, the Decision-Making Anxiety Inventory has been shown throughout all studies to be a useful measure of decision-making anxiety, able to discriminate between individuals who experience varying levels of anxiety when faced with a decision. Furthermore, the DMAI allows for the measurement of anxiety using a specific, narrow approach. As previously reviewed, personality can be conceptualized as hierarchical, with more specific and contextual traits at the lower levels (Wang & Bowling, 2016). This situation-specific perspective is important (Beckmann et al., 2020; Ziegler et al., 2019). Indeed, many studies have highlighted the importance of using narrow measures when possible (Sackett et al., 2017; Schmit et al, 1995; Schneider et al., 1996; Wang & Bowling, 2016). This perspective is especially relevant to the decision-making literature, with Mohammed and Schwall (2009) specifically recommending the study of narrow traits as opposed to broad traits. Accordingly, researchers interested in the study of anxiety in decision-making now have the ability to measure decision-making anxiety using the DMAI.

Second, results from the present dissertation contribute to providing insights into how individual differences influence the decision-making process. While decision-making is a highly popular topic of study, past research has overlooked individual differences in favour of studying the situational and task aspects of the decision process (Mohammed & Schwall, 2009). Gaps

continue to be identified. Recently, Siebert et al. (2020) note that few studies have examined individual differences in how people differ in their ability to think of quality alternatives when faced with a decision, and of those, the most recent dates from over 20 years ago. Even within the individual differences literature, there has been additional calls to action, for example, with Cheek and Schwartz (2016) highlighting that most studies that compare maximizers and satisficers have neglected to investigate how other individual differences might be of importance. The findings of this dissertation suggest that decision-making anxiety might influence decision-related behaviours and perceptions, which can inform future studies on individual differences in decision-making.

Implications can be drawn from the results of the studies included in this dissertation. Foremost, the findings suggest the possibility that anxious decision-makers have preconceived beliefs about themselves and their ability to make decisions, which might influence how they experience the act of decision-making. Thus, interventions aimed at helping individuals understand, cope with, and regulate their decision-making anxiety might be helpful in shifting these beliefs, and possibly improving the subjective quality of the decisions they make. Results from a recent study suggest this might be a promising area of intervention. Indeed, researchers noted an increase in decision-related self-esteem after participants took part in a group decision-making training exercise (Colakkadioglu & Celik, 2016). Perhaps this type of intervention would also increase perceived decision-making quality and decision-making competence. One-on-one counselling interventions could also potentially help individuals improve their subjective experience of decision-making. In particular, from a transdiagnostic approach framework (Barlow et al., 2017), treatment could focus on understanding the triggers, reactions, and consequences of decision-making anxiety, and subsequently, focus on new, adaptive ways to

respond to the situation of decision-making. Furthermore, interventions could also utilize peer perceptions as a way to help clients challenge their cognitions about decision-making. For example, it might be pertinent in some cases to poll a few close friends about their perspectives on various decisions the client has made throughout their friendship, in order to gain a more balanced viewpoint. Overall, because decisions are a fundamental part of life, helping individuals reduce their decision-making anxiety might lead them to experiencing better decisions, as well as improving their perceptions about themselves, which might have far-reaching consequences.

Another implication derived from the findings of the present research is that the experience of decision-making anxiety has behavioural consequences which may influence or possibly interfere with certain aspects of the decision-making process. This influence, however, does not always seem to be captured by objective variables such as objective decision-making competence or more distal outcomes like the number of job offers received. This implies that behaviours (or absence thereof, in the context of decision-making avoidance) might best reflect the tangible consequences of decision-making anxiety in the decision-making process. Perhaps in general, this suggests the importance of the use of behaviours as outcome variables relating to individual differences in decision-making. A recent example can be found in a study on daily intuitive and rational decisions, which highlighted that a lot of repeated, common choices cannot be objectively judged as correct or incorrect (Zander-Schellenberg et al., 2019). The authors give the example of a common social decision, in which one decides to hang out with friends instead of staying home alone. Judging whether this choice constitutes a "good" or "bad" decision is not straightforward, as the criteria is unclear, and likely varies according to various individual factors. Building on this example, using specific behaviours as outcomes would allow to capture

patterns in the way individuals decide that might not otherwise be discernable through objective means. For instance, perhaps the person who chooses to go out with friends consistently decides to prioritize social outings over other tasks, like studying or chores. Maybe they struggle with how to organize their time, and social invitations are seen as choices being made for them, which is less anxiety-provoking. Examining one decision would not capture all of this information. In all, these patterns of behaviours could be indicative of the role of individual differences in decision-making. This is in line with the importance of studying predecisional processes, which are considered by many as representing the most vital phase of decision-making, because of its subsequent impact on the remaining elements involved in a decision (Mohammed & Schwall, 2009).

Future Research Directions

The findings from all three studies allow for a better understanding of decision-making anxiety in the landscape of individual differences in decision-making. They also provide ideas for potential avenues of research. The results of the present dissertation suggest that anxious decision-makers differ from others with respect to certain areas of the decision-making process, namely the subjective experience of decision outcomes, and the strategies they adopt when faced with a decision. However, the underlying mechanisms at play are not yet clear. One way to further examine these mechanisms could incorporating the use of process-tracing methods, which involves asking participants to "think aloud or manipulate stimuli as they perform tasks" (Fischhoff & Broomell, 2020, p.337). This method might allow for clarification on what shapes the perceptions of anxious decision-makers, how decision-making anxiety influences the decision-making process and what ultimately drives their behaviours. In addition, this approach could be useful in formally testing theoretical models, like the transactional process model

(Spielberger & Vagg, 1995). For example, when making a decision in the laboratory, participants could be asked about their subjective experience, by being instructed to describe the thoughts, bodily sensations, and emotions that are coming up for them in the moment. Then, the reactions of the participants could be compared based on their DMAI scores. In addition, future studies could also use a mixed-methods approach to further understand the perspective of anxious decision-makers. Specifically, the use of a narrative interview method (Mueller, 2019) would allow to capture first person accounts of the experience of anxiety in the decision-making process, and how they feel it relates to the decision-making process.

Another interesting theory to examine is the Unified Threshold Model (UTM; Curley et al., 2019). In their review paper, Curley and colleagues posit that this model is the future of decision science. The UTM refers to the process where a decision is made because a specific information threshold has been reached (Curley et al., 2019). This relates to individual differences, in that people vary in the amount of information they use to make a decision, and how they use this information. Process-tracing would be a useful tool in examining the differences between those who experience high levels of decision-making anxiety and those who do not, in terms of what and how much information they use when faced with a choice. In a similar vein, recent research has examined individual differences in the earlier phase of decision-making, the generating alternatives phase. Findings from this study revealed that those who are good at generating alternatives, labeled proactive decision makers, experience better outcomes, such as higher life satisfaction (Siebert et al., 2020). The authors then suggest that this experience of better outcomes leads to a more positive perspective of their own decision-making skills. Some tentative links can be drawn between the results of the present dissertation and these two papers. Results from Study 2 revealed that anxious decision-makers report poorer outcomes,

and do not perceive themselves as skilled in decision-making. Results from Study 3 demonstrated that decision-making anxiety has a significant impact on job-search related behaviours and strategies, with anxious decision-makers showing less effort and intensity in their job search behaviours, in addition to being more prone to adopting suboptimal job search strategies, like a haphazard approach. Together, these findings could signal that anxious decision-makers might be less engaged and effortful in the earlier phases of decision-making, such as information gathering and generating alternatives, perhaps having a lower information threshold than those who are less anxious. This could then explain their subjective experience of worse outcomes, and their more negative perspective on their ability to make good decisions. Nevertheless, future studies should directly investigate how decision-making anxiety influences the amount of information used for decisions, and the amount of alternatives generated at the beginning of the decision-making process. If decision-making anxiety does negatively impact the more proximal processes involved in making decisions, what does that concretely mean in terms of impact on daily and lifelong functioning? Knowing more about the relevant underlying mechanisms that explain individual differences in decision-making anxiety, and how they manifest in terms of real-life consequences would allow for the development of specific interventions to help anxious decisions-makers have better experiences when they are faced with a decision.

Secondly, because the conceptualization of decision-making anxiety as a situation-specific trait is a different approach than what existed in the literature, one important area that necessitates further exploration is to examine the antecedents decision-making anxiety. In light of the potential discrepancy between subjective and objective decision-making competence revealed in Study 2, it seems important to investigate the relationship between decision-making

anxiety and self-concept constructs. Turning to the Test Anxiety literature, a recent meta-analysis demonstrated that internal locus of control, self-efficacy, self-regulation, self-esteem and academic confidence were all significant negative correlates of test anxiety (von der Embse et al., 2018). Some existing research in the decision-making literature also suggests the importance of self-concept in decision-making. For example, those with high decision self-esteem report better life satisfaction (Deniz, 2006). In addition, those who report higher levels of self-critical cognitions tend to procrastinate when they need to make a decision (McGarity-Palmer et al., 2019). Exploring the relationships between decision-making anxiety and self-concept constructs would allow for a greater understanding of the characteristics of anxious decision-makers, and possibly help explain why they seem to perceive themselves as having lower decision-making competence. If anxious decision-makers do indeed generally perceive themselves in a more negative light, then self-esteem-related interventions might be helpful in improving personal decision-making. For example, addressing maladaptive cognitions and core beliefs, either in therapy or using self-help workbooks (e.g., Fennell, 2016; Schiraldi, 2016) might help individuals have more accurate perceptions about themselves in general, and in the context of decision-making.

Similarly, another potentially relevant target of future studies is individual differences in emotion regulation. Recently, the notion of flexible emotion regulation was introduced. It consists of the "the ability to effectively regulate emotions by applying different emotion regulation strategies (chosen from a broad repertoire) in different situations depending on the features of a situation and one's own personality characteristics" (Kobylińska & Kusev, 2019, p.4). Conceptualized as a situation-specific trait as well, it appears that it would be able to take into account different decision domains and levels of difficulty. Emotion regulation in the

context of decision-making appears to be understudied, with the majority of studies examining emotion regulation strategies in risk-taking (e.g., Heilman et al., 2010; Martin & Delgado, 2011; Panno et al., 2013). Understanding how individual differences in emotion regulation might relate decision-making anxiety would not only help expand our knowledge on anxious decision-makers, but it would also continue to build up the individual differences in decision-making literature. Specifically, it would be important to investigate how one's ability to regulate emotions might influence the relationship between decision-making anxiety and decision-related behaviours. It is possible that anxious decision-makers who particularly struggle with emotions might experience worse decision outcomes. If that is the case, then interventions emotion regulation strategies directly might be very effective in helping those who experience high levels of anxiety when making decisions. In particular, learning dialectical-behavioural therapy-based skills to improve how to regulate emotions, such as mindfulness and distress tolerance, might be especially useful (e.g., Chapman et al., 2011; Linehan, 2015).

Finally, as mentioned above, all five samples used in this dissertation revealed that women report higher decision-making anxiety scores than men. It would be important for future studies to further delve into this finding. The first step in doing so should involve testing the DMAI for measurement invariance (Vandenberg & Lance, 2000), in order to confirm that it functions similarly amongst both groups. Indeed, this is a crucial step before drawing any conclusions about how men and women differ with respect to their tendency to experience decision-making anxiety. A recent example in the broader decision-making research has shown the importance of adopting a sound methodological approach when examining gender-related differences. Zhang et al. (2018) tested a very popular measure of risk-taking, the Domain-Specific Risk-Taking scale (DOSPERT; Weber et al., 2002). Since its introduction, some

researchers have reported on gender differences in risk-taking. Unfortunately, the analyses revealed that this scale violates the principles of measurement invariance, signaling a need for gender-related results to be interpreted with caution (Zhang et al., 2018). If the DMAI is shown to be non-invariant based on gender, future studies could seek to further understand what contributes to this finding. Specifically, it would be important to understand if this difference is rooted in the broader anxiety literature, as reviewed above. Turning once again to the test anxiety literature, studies have shown that while women experience higher levels of text anxiety than men, the difference lies in their affective responses to tests (the Emotionality factor), with their scores on the Worry factor not being significantly different than those of their male counterparts (Zeidner, 1998). This suggests that it might also be worthwhile to examine gender differences in each of the DMAI's three factors.

Another interesting avenue of future research would be to examine how anxious male and female decision-makers differ in terms of the experience of decision-making outcomes. Indeed, research from the employment selection test and interview anxiety literature can offer some insight into this future direction. In their elaboration of the sex-linked anxiety coping theory, McCarthy and Goffin (2005) caution against making assumptions about women being at a disadvantage simply because they report higher levels of anxiety. Their theory suggests that while women experience more anxiety than men, they are better equipped in terms of coping, and as such, highly anxious men experience more detrimental effects of anxiety than do highly anxious women in employment selection contexts. In their study, the authors found that the negative relationship between test anxiety and selection test performance was stronger for men than for women. Further support for this theory has been found in the context of interview anxiety. Feiler and Powell (2013) found that the interview performance of men was more

affected by anxiety, compared to women. Moreover, another study found that interview anxiety was only a negative predictor of performance for men, despite women reporting higher levels of anxiety (Feeney et al., 2015). Thus, it is important to further examine gender differences in decision-making anxiety, in order to investigate if the sex-linked anxiety coping theory is relevant for this type of situation-specific anxiety. If future studies show that women or men consistently experience poorer outcomes, it would be pertinent to tailor interventions to this specific group, to close the gap.

Conclusion

In conclusion, the present dissertation adds to both the individual differences in decision-making literature, and the anxiety in decision-making literature, by adopting a situation-specific lens to the study of decision-making anxiety, and by providing a way to measure it, with the development and validation of the Decision-Making Anxiety Inventory in Studies 1a, 1b and 1c. Results from Studies 2 and 3 contribute insights into the role this new construct plays in the decision-making process. The findings suggest that individuals who experience high levels of decision-making anxiety differ in their perception of their own decision-making competence, in their experience of decision outcomes, and in their decision-related behaviours. Altogether, this dissertation lays the groundwork for the study of this exciting decision-making individual difference.

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Appendix A. Relevant Materials for Study 1

Ethics Approval Certificate

File Number: 06-14-30 **Date (mm/dd/yyyy):** 09/03/2014

Université d'Ottawa
Bureau d'éthique et d'intégrité de la recherche

University of Ottawa
Office of Research Ethics and Integrity

Ethics Approval Notice

Social Sciences and Humanities REB

Principal Investigator / Supervisor / Co-investigator(s) / Student(s)

First Name	Last Name	Affiliation	Role
Silvia	Bonaccio	School of Management	Principal Investigator
Annie	Girard	Social Sciences / Psychology	Co-investigator

File Number: 06-14-30

Type of Project: Professor

Title: Decision-Making Anxiety

Approval Date (mm/dd/yyyy)	Expiry Date (mm/dd/yyyy)	Approval Type
09/03/2014	09/02/2015	Ia

(Ia: Approval, Ib: Approval for initial stage only)

Special Conditions / Comments:
N/A

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File Number: 06-14-30 **Date (mm/dd/yyyy):** 09/03/2014

Université d'Ottawa University of Ottawa
Bureau d'éthique et d'intégrité de la recherche Office of Research Ethics and Integrity

This is to confirm that the University of Ottawa Research Ethics Board identified above, which operates in accordance with the Tri-Council Policy Statement (2010) and other applicable laws and regulations in Ontario, has examined and approved the ethics application for the above named research project. Ethics approval is valid for the period indicated above and subject to the conditions listed in the section entitled "Special Conditions / Comments".

During the course of the project, the protocol may not be modified without prior written approval from the REB except when necessary to remove participants from immediate endangerment or when the modification(s) pertain to only administrative or logistical components of the project (e.g., change of telephone number). Investigators must also promptly alert the REB of any changes which increase the risk to participant(s), any changes which considerably affect the conduct of the project, all unanticipated and harmful events that occur, and new information that may negatively affect the conduct of the project and safety of the participant(s). Modifications to the project, including consent and recruitment documentation, should be submitted to the Ethics Office for approval using the "Modification to research project" form available at: http://www.research.uottawa.ca/ethics/forms.html.

Please submit an annual report to the Ethics Office four weeks before the above-referenced expiry date to request a renewal of this ethics approval. To close the file, a final report must be submitted. These documents can be found at: http://www.research.uottawa.ca/ethics/forms.html.

If you have any questions, please do not hesitate to contact the Ethics Office at extension 5387 or by e-mail at: ethics@uOttawa.ca.

Kim Thompson
Protocol Officer for Ethics in Research
For Barbara Graves, Chair of the Social Sciences and Humanities REB

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Consent Message

Title of the study: A Study on Decision-Making

Principal Investigator: Silvia Bonaccio, Ph.D.
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Phone: (613) 562-5800 Ext. 4690; Fax: (613) 562-5164

Co-Investigator: Annie J. Girard
Clinical Psychology Graduate Student
School of Psychology; VNR 2090
University of Ottawa
136 Jean Jacques Lussier
Ottawa, Ontario, K1N 6N5

Invitation to Participate: You are invited to participate in the abovementioned research study conducted by graduate student Annie J. Girard and Professor Silvia Bonaccio.

Purpose of the Study: The purpose of this study is to understand how individuals differ in terms of how they approach decisions, and how they feel during and after making a choice.

Participation: If you wish to participate in this study, please complete the following survey. Your decision to complete this survey will be interpreted as an indication of your consent to participate. The questionnaire should take you approximately 45 minutes to complete. You do not have to answer any question that you prefer not to answer. No personally identifying information will be collected.

Benefits: Your participation in this study will help researchers understand the decision-making process by looking at how people make decisions and how they feel about them.

Risks: There are no foreseeable risks from participating in this study. However, it is possible that certain questions in the survey make you feel uncomfortable. Should you experience psychological discomfort resulting from this study, you may contact the Counselling and Coaching Service at the University of Ottawa (100 Marie Curie, 4th floor), tel. (613) 562-5200 or couns@uOttawa.ca. The Counselling and Coaching Service offers psychological counselling free of charge for any student registered in at least one course in an academic session at the University of Ottawa. The Service attempts to provide students with an initial appointment within 48 hours of their request.

Confidentiality and anonymity: The information you will share will remain strictly confidential. The answers to the questionnaires will be used only for research purposes. Your confidentiality and anonymity will be protected. You will not be asked to provide any identifying information at any point in the study. Only aggregate information will be provided in the research reports.

Conservation of data: The electronic data collected will be kept in a secure manner in the principal researcher's office and will be password protected. The data will be kept for 10 years. In the meantime, the password will be changed periodically to ensure continued confidentiality. The data will not be made available to those outside of the researcher's research team.

Compensation. In agreement with the Integrated System of Participation in Research (ISPR) hosted by the School of Psychology, you will be granted one point for participating in this study. Should you choose to withdraw from the study, you will still be granted your ISPR credit.

Voluntary Participation: You are under no obligation to participate and if you choose to participate, you can withdraw from the study at any time and/or refuse to answer any questions, without suffering any negative consequences. Furthermore, if you choose to withdraw, all data gathered until the time of withdrawal will be destroyed. If you wish to withdraw after you have submitted your answers, please contact us with your ISPR code and we will delete all of the data associated with that code.

Acceptance: By completing the online survey, you agree to participate in the above research study conducted by Professor Silvia Bonaccio of the Telfer School of Management and Annie J. Girard of the School of Psychology, at the University of Ottawa.

If you have any questions about the study, you may contact the researchers at the numbers mentioned herein. If you have any questions with regards to the ethical conduct of this study, you may contact the Protocol Officer for Ethics in Research, University of Ottawa, Tabaret Hall, 550 Cumberland Street, Room 154, Ottawa, ON K1N 6N5, tel.: (613) 562-5387 or ethics@uottawa.ca.

Participants should print a copy of the consent form to keep for their personal records.

ISPR message

People are required to make decisions quite often. We are interested in finding out more about the decision-making process. More specifically, how individuals differ in terms of how they approach decisions, and how they feel during and after making a choice. Participation in this study consists of answering an online questionnaire that will take approximately 45 minutes to fill out. Please note that this study will be conducted solely in English.

Measures

Decision-Making Anxiety Inventory (DMAI)
When I am faced with a decision:
1. I feel nervous.
2. I can't seem to focus.
3. I feel calm (R)
4. I get nauseated.
5. I feel anxious.
6. My heart races.
7. I find it hard to concentrate.
8. My stomach is often in knots.

State Trait Anxiety Inventory – Form Y-2 (Spielberger et al., 1983)
1. I feel pleasant.
2. I feel nervous and restless.
3. I feel satisfied with myself.
4. I wish I could be as happy as others seem to be.
5. I feel like a failure.
6. I feel rested.
7. I am "calm, cool and collected".
8. I feel that difficulties are piling up so that I cannot overcome them.
9. I worry too much over something that really doesn't matter.
10. I am happy.
11. I have disturbing thoughts.
12. I lack self-confidence.
13. I feel secure.
14. I make decisions easily.
15. I feel inadequate.
16. I am content.
17. Some unimportant thought runs through my mind and bothers me.
18. I take disappointments so keenly that I can't put them out of my mind.
19. I am a steady person.
20. I get in a state of tension or turmoil as I think over my recent concerns and interests.

Indecisiveness Scale (Rassin et al., 2008)
1. I find it easy to make decisions.
2. After I have chosen or decided something, I often believe I've made the wrong choice or decision.
3. Once I make a decision, I feel fairly confident that it is a good one.
4. I try to put off making decisions.
5. I usually make decisions quickly.
6. I like to be in a position to make decisions.
7. I become anxious when making a decision.
8. I often worry about making the wrong decision.
9. I always know exactly what I want.

10. Once I make a decision, I stop worrying about it.
11. It seems that deciding on the most trivial thing takes me a long time.

Regret Scale (Schwartz et al., 2002)

1. Whenever I make a choice, I'm curious about what would have happened if I had chosen differently.
2. Whenever I make a choice, I try to get information about how the other alternatives turned out.
3. If I make a choice and it turns out well, I still feel like something of a failure if I find out that another choice would have turned out better.
4. When I think about how I'm doing in life, I often assess opportunities I have passed up.
5. Once I make a decision, I don't look back.

Mini-IPIP Scale (Donnellan et al., 2006)

Neuroticism

1. Have frequent mood swings.
2. Am relaxed most of the time. (R)
3. Get upset easily.
4. Seldom feel blue. (R)

Conscientiousness

1. Get chores done right away.
2. Often forget to put things back in their proper place. (R)
3. Like order.
4. Make a mess of things. (R)

Extraversion

1. Am the life of the party.
2. Talk to a lot of different people at parties.
3. Don't talk a lot. (R)
4. Keep in the background. (R)

Agreeableness

1. Sympathize with others' feelings.
2. Feel others' emotions.
3. Am not really interested in others. (R)
4. Am not interested in other people's problems. (R)

Openness

1. Have a vivid imagination.
2. Have difficulty understanding abstract ideas. (R)
3. Am not interested in abstract ideas. (R)
4. Do not have a good imagination. (R)

General Decision-Making Style Questionnaire – GDMS (Scott & Bruce, 1995)

1. I double-check my information sources to be sure I have the right facts before making decisions.
2. When making decisions, I rely upon my instincts.
3. I often need the assistance of other people when making important decisions.
4. I avoid making important decisions until the pressure is on.
5. I generally make snap decisions.
6. I make decisions in a logical and systematic way.
7. When I make decisions, I tend to rely on my intuition.
8. I rarely make important decisions without consulting other people.
9. I postpone decision making whenever possible.
10. I often make decisions on the spur of the moment.
11. My decision making requires careful thought.
12. When I make a decision, it is more important for me to feel the decision is right than to have a rational reason for it.
13. If I have the support of others, it is easier for me to make important decisions.
14. I often procrastinate when it comes to making important decisions.
15. I make quick decisions.
16. When making a decision, I consider various options in terms of a specific goal.
17. I generally make decisions that feel right to me.
18. I use the advice of other people in making my important decisions.
19. I generally make important decisions at the last minute.
20. I often make impulsive decisions.
21. I usually have a rational basis for making a decision.
22. When I make a decision, I trust my inner feelings and reactions.
23. I like to have someone to steer me in the right direction when I am faced with important decisions.
24. I put off making many decisions because thinking about them makes me uneasy.
25. When making decisions, I do what seems natural at the moment.

Anxious Decision-Making Style (Dewberry et al., 2013)

1. I feel very anxious when I need to make a decision.
2. I feel I am under tremendous time pressure when making decisions.
3. I panic when I think that my decision might be wrong.
4. When making a decision, I am afraid that I might be wrong.
5. I can't think straight if I have to make decisions in a hurry.
6. Making important decisions makes me feel very tense and anxious.
7. I generally feel very relaxed and at ease when I make decisions. (R)
8. I can feel myself getting tense when I have to take decisions.

Initial 40-item version of the Decision-Making Anxiety Inventory

1. I often don't know what option to choose when I'm faced with a decision.
2. When I'm faced with a decision, I wish the decision could be done for me.
3. I feel calm when I'm faced with a decision. (R)
4. I feel overwhelmed when I'm faced with a decision.
5. I feel tense when I'm faced with a decision.
6. The thought of having to make a decision makes me anxious.
7. I feel anxious when I'm faced with a decision.
8. I have trouble sleeping when I'm faced with a decision.
9. I feel uneasy when I'm faced with a decision.
10. I get nauseated when I'm faced with a decision.
11. When I'm faced with a decision, I try to avoid thinking about it.
12. I feel preoccupied when I'm faced with a decision.
13. I feel uncomfortable when I'm faced with a decision.
14. I'm afraid to make the wrong choice when I'm faced with a decision.
15. My mind goes blank when I'm faced with a decision.
16. When I'm faced with a decision, I have trouble picking an option.
17. I worry about not picking the right option when I'm faced with a decision.
18. I feel nervous when I'm faced with a decision.
19. I feel like I have to make the perfect choice when I'm faced with a decision.
20. When I'm faced with a decision, I wish someone could choose for me.
21. When I'm faced with a decision, I need to know every possible outcome before picking an option.
22. I don't worry about picking the best option when I'm faced with a decision (R).
23. I think about all the past mistakes I've made when I'm faced with a decision.
24. I can't seem to focus when I'm faced with a decision.
25. When I'm faced with a decision, I try to get it over with as soon as possible.
26. I try to think of something else when I'm faced with a decision.
27. I struggle with all the different options when I'm faced with a decision.
28. I put a lot of pressure on myself for making the right decision.
29. When I'm faced with a decision, I'm afraid others will disapprove of my choices.
30. I am anxious when I'm faced with a decision.

31. I worry when I’m faced with a decision.
32. My stomach is often in knots when I’m faced with a decision.
33. My heart races when I’m faced with a decision.
34. I find it hard to concentrate when I’m faced with a decision.
35. I often find myself unable to decide between two options.
36. Even small decisions make me anxious.
37. I get really stressed out when I’m faced with a decision.
38. When I make decisions, the thought "what happens if I am wrong" enters my mind.
39. I often worry about making the wrong decision
40. Having to make decisions paralyzes me with fear

Table A.1

Reduction of Items Based on the Initial Version of the DMAI

ITEM TEXT	DMAI V1 ITEM #	FLAGGED FOR REMOVAL?	DECISION	DMAI V2 ITEM #
I often don't know what option to choose when I'm faced with a decision.	1	Yes - EFA	REMOVED	
When I'm faced with a decision, I wish the decision could be done for me.	2	Yes - EFA	REMOVED	
I feel calm when I'm faced with a decision. (R)	3	No	KEPT	1
I feel overwhelmed when I'm faced with a decision.	4	No	KEPT	2
I feel tense when I'm faced with a decision.	5	No	KEPT	3
The thought of having to make a decision makes me anxious.	6	No	KEPT	4
I feel anxious when I'm faced with a decision.	7	No	KEPT	5
I have trouble sleeping when I'm faced with a decision.	8	Yes – Inter-item correlations	REMOVED	
I feel uneasy when I'm faced with a decision.	9	No	KEPT	6
I get nauseated when I'm faced with a decision.	10	No	KEPT	7
When I'm faced with a decision, I try to avoid thinking about it.	11	Yes - EFA	REMOVED	
I feel preoccupied when I'm faced with a decision.	12	No	KEPT	8
I feel uncomfortable when I'm faced with a decision.	13	No	KEPT	9

I'm afraid to make the wrong choice when I'm faced with a decision.	14	Yes - EFA	REMOVED	
My mind goes blank when I'm faced with a decision.	15	Yes - EFA	REMOVED	
When I'm faced with a decision, I have trouble picking an option.	16	Yes - EFA	REMOVED	
I feel nervous when I'm faced with a decision.	17	No	KEPT	10
I worry about not picking the right option when I'm faced with a decision.	18	Yes - EFA	REMOVED	
I feel like I have to make the perfect choice when I'm faced with a decision.	19	Yes – EFA and inter-item correlations	REMOVED	
When I'm faced with a decision, I wish someone could choose for me.	20	Yes - EFA	REMOVED	
When I'm faced with a decision, I need to know every possible outcome before picking an option.	21	Yes – EFA and inter-item correlations	REMOVED	
I don't worry about picking the best option when I'm faced with a decision (R).	22	Yes – EFA and inter-item correlations	REMOVED	
I think about all the past mistakes I've made when I'm faced with a decision.	23	Yes – EFA and inter-item correlations	REMOVED	
I can't seem to focus when I'm faced with a decision.	24	No	KEPT	11
When I'm faced with a decision, I try to get it over with as soon as possible.	25	Yes – EFA and inter-item correlations	REMOVED	
I try to think of something else when I'm faced with a decision.	26	Yes – EFA and inter-item correlations	REMOVED	
I struggle with all the different options when I'm faced with a decision.	27	Yes - EFA	REMOVED	
I put a lot of pressure on myself for making the right decision.	28	Yes - EFA	REMOVED	
When I'm faced with a decision, I'm afraid others will disapprove of my choices.	29	Yes - EFA	REMOVED	

I am anxious when I'm faced with a decision.	30	No	KEPT	12
I worry when I'm faced with a decision.	31	No	KEPT	13
My stomach is often in knots when I'm faced with a decision.	32	No	KEPT	14
My heart races when I'm faced with a decision.	33	No	KEPT	15
I find it hard to concentrate when I'm faced with a decision.	34	No	KEPT	16
I often find myself unable to decide between two options.	35	Yes - EFA	REMOVED	
Even small decisions make me anxious.	36	No	KEPT	17
I get really stressed out when I'm faced with a decision.	37	No	KEPT	18
When I make decisions, the thought "what happens if I am wrong" enters my mind.	38	Yes – EFA and inter-item correlations	REMOVED	
I often worry about making the wrong decision	39	Yes - EFA	REMOVED	
Having to make decisions paralyzes me with fear.	40	No	KEPT	19

Appendix B. Relevant Materials for Study 2

Ethics Approval Certificate

15/09/2017

Université d'Ottawa
Bureau d'éthique et d'intégrité de la recherche

University of Ottawa
Office of Research Ethics and Integrity

CERTIFICAT D'APPROBATION ÉTHIQUE | CERTIFICATE OF ETHICS APPROVAL

Numéro du dossier / Ethics File Number	H-08-17-74
Titre du projet / Project Title	THE EFFECT OF DECISION-MAKING ANXIETY ON DECISION-MAKING COMPETENCE AND QUALITY
Type de projet / Project Type	Thèse de doctorat / Doctoral thesis
Statut du projet / Project Status	Approuvé / Approved
Date d'approbation (jj/mm/aaaa) / Approval Date (dd/mm/yyyy)	15/09/2017
Date d'expiration (jj/mm/aaaa) / Expiry Date (dd/mm/yyyy)	14/09/2018

Équipe de recherche / Research Team

Chercheur / Researcher	Affiliation	Role
Annie GIRARD	École de psychologie / School of Psychology	Chercheur Principal / Principal Investigator
Silvia BONACCIO	École de gestion Telfer / Telfer School of Management	Superviseur / Supervisor

Conditions spéciales ou commentaires / Special conditions or comments

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www.recherche.uottawa.ca/deontologie | www.recherche.uottawa.ca/ethics

15/09/2017

Université d'Ottawa
Bureau d'éthique et d'intégrité de la recherche

University of Ottawa
Office of Research Ethics and Integrity

Le Comité d'éthique de la recherche (CÉR) de l'Université d'Ottawa, opérant conformément à l'*Énoncé de politique des Trois conseils* (2014) et toutes autres lois et tous règlements applicables, a examiné et approuvé la demande d'éthique du projet de recherche ci-nommé.

L'approbation est valide pour la durée indiquée plus haut et est sujette aux conditions énumérées dans la section intitulée "Conditions Spéciales ou Commentaires". Le formulaire « Renouvellement ou Fermeture de Projet » doit être complété quatre semaines avant la date d'échéance indiquée ci-haut afin de demander un renouvellement de cette approbation éthique ou afin de fermer le dossier.

Toutes modifications apportées au projet doivent être approuvées par le CÉR avant leur mise en place, sauf si le participant doit être retiré en raison d'un danger immédiat ou s'il s'agit d'un changement ayant trait à des éléments administratifs ou logistiques du projet. Les chercheurs doivent aviser le CÉR dans les plus brefs délais de tout changement pouvant augmenter le niveau de risque aux participants ou pouvant affecter considérablement le déroulement du projet, rapporter tout évènement imprévu ou indésirable et soumettre toute nouvelle information pouvant nuire à la conduite du projet ou à la sécurité des participants.

The University of Ottawa Research Ethics Board, which operates in accordance with the *Tri-Council Policy Statement* (2014) and other applicable laws and regulations, has examined and approved the ethics application for the above-named research project.

Ethics approval is valid for the period indicated above and is subject to the conditions listed in the section entitled "Special Conditions or Comments". The "Renewal/Project Closure" form must be completedfour weeks before the above-referenced expiry date to request a renewal of this ethics approval or closure of the file.

Any changes made to the project must be approved by the REB before being implemented, except when necessary to remove participants from immediate endangerment or when the modification(s) only pertain to administrative or logistical components of the project. Investigators must also promptly alert the REB of any changes that increase the risk to participant(s), any changes that considerably affect the conduct of the project, all unanticipated and harmful events that occur, and new information that may negatively affect the conduct of the project or the safety of the participant(s).

Gabriel PETITTI
Responsable d'éthique en recherche / Protocol Officer
Pour/For **Daniel LAGAREC** Président(e) du/ Chair of the **Comité d'éthique de la recherche en sciences sociales et humanités / Social Sciences and Humanities Research Ethics Board**

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www.recherche.uottawa.ca/deontologie | www.recherche.uottawa.ca/ethics

Consent Message – Focal Participants

Title of the study: The Effect of Decision-Making Anxiety on Decision-Making Competence And Quality

Principal Investigator:
Annie J. Girard
Clinical Psychology Graduate Student
School of Psychology; VNR 2090
University of Ottawa
136 Jean Jacques Lussier
Ottawa, Ontario, K1N 6N5

Supervisor:
Silvia Bonaccio, Ph.D.
Telfer School of Management; DMS 5149
University of Ottawa
55 Laurier Avenue East
Ottawa, Ontario, K1N 6N5
Phone: (613) 562-5800 Ext. 4690; Fax: (613) 562-5164

Invitation to Participate: You are invited to participate in the abovementioned research study conducted by graduate student Annie J. Girard and Professor Silvia Bonaccio.

Purpose of the Study: The purpose of this study is to understand how people make decisions, and how they feel when making these choices. Specifically, this study is designed to assess decision-making anxiety and its relationships with decision-making competence and decision quality.

Participation: If you wish to participate in this study, please complete the following survey. Your decision to complete this survey will be interpreted as an indication of your consent to participate. The questionnaire should take you approximately 45 minutes to complete. You do not have to answer any question that you prefer not to answer. No personally identifying information will be collected.

At the end of the survey, you will be invited to participate in the second phase of this study. Participation in the second phase only requires you to provide us with a friend's email address, in order for us to send them a survey about your decision-making abilities. You may choose to only participate in the first phase of the study, that is, answering the following survey.

Benefits: Your participation in this study will help researchers understand the decision-making process by looking at how people make decisions and how they feel about them.

Risks: There are no foreseeable risks from participating in this study. However, it is possible that certain questions in the survey make you feel uncomfortable. Should you experience psychological discomfort resulting from this study, you may contact the Counselling and

Coaching Service at the University of Ottawa (100 Marie Curie, 4th floor), tel. (613) 562-5200 or couns@uOttawa.ca. The Counselling and Coaching Service offers psychological counselling free of charge for any student registered in at least one course in an academic session at the University of Ottawa. The Service attempts to provide students with an initial appointment within 48 hours of their request.

Confidentiality and anonymity: The information you will share will remain strictly confidential. The answers to the questionnaires will be used only for research purposes. Your confidentiality and anonymity will be protected. Only aggregate information will be provided in the research reports.

If you decide to participate in the second phase of the study, the information you provide us for the draw (see section on compensation below) and for the referral will be kept separate from your survey answers, therefore your name will not be linked to your responses. Once the prize has been awarded, your name and the contact information you have provided will be destroyed. Furthermore, the friend you refer to us will not receive any information about your answers. You will be asked to provide your friend with a unique code to allow us to link both surveys together, while protecting your anonymity and confidentiality.

Conservation of data: The electronic data collected will be kept in a secure manner in the principal researcher's office and will be password protected. The data will be kept for 10 years. In the meantime, the password will be changed periodically to ensure continued confidentiality. The data will not be made available to those outside of the researcher's research team.

Compensation. In agreement with the Integrated System of Participation in Research (ISPR) hosted by the School of Psychology, you will be granted one point for participating in this study. Should you choose to withdraw from the study, you will still be granted your ISPR credit.

If you decide to participate in the second phase of the study, you will be given the option to enter your name in a draw to win an Amazon Canada gift card valued at 50 $ (Canadian dollars). The draw is open to all research participants who decide to participate in the second phase of our study, regardless of whether their friend answers our survey.

Upon completion of the study, a name will be randomly selected amongst those who have entered and the person whose name is drawn will be informed by email. To win the prize, the person must correctly answer a skill testing question. If the person cannot be reached within 14 days from the date of the draw, the prize will be awarded to the second name that is randomly selected and so on until the prize has been awarded. The odds of winning a prize will depend on the number of eligible entries received. The prize must be accepted as awarded or forfeited and cannot be redeemed for cash.

Your name and email address that you provide when you enter the draw is collected for the purposes of contacting you if your name is selected in the draw. Your name and the contact information you have provided will be kept confidential and then destroyed once the prize have been awarded. The draw is governed by the applicable laws of Canada.

Voluntary Participation: You are under no obligation to participate and if you choose to participate, you can withdraw from the study at any time and/or refuse to answer any questions, without suffering any negative consequences. Furthermore, if you choose to withdraw, all data gathered until the time of withdrawal will be destroyed. If you wish to withdraw after you have submitted your answers, please contact us with your ISPR code and we will delete all of the data associated with that code.

Acceptance: By completing the online survey, you agree to participate in the above research study conducted by and Annie J. Girard of the School of Psychology and Professor Silvia Bonaccio of the Telfer School of Management, at the University of Ottawa.

If you have any questions about the study, you may contact the researchers at the numbers mentioned herein. If you have any questions with regards to the ethical conduct of this study, you may contact the Protocol Officer for Ethics in Research, University of Ottawa, Tabaret Hall, 550 Cumberland Street, Room 154, Ottawa, ON K1N 6N5, tel.: (613) 562-5387 or ethics@uottawa.ca.

It is recommended to print a copy of the consent form to keep for your personal records.

Consent Message – Peer Participants

Title of the study: The Effect of Decision-Making Anxiety on Decision-Making Competence And Quality

Principal Investigator:
Annie J. Girard
Clinical Psychology Graduate Student
School of Psychology; VNR 2090
University of Ottawa
136 Jean Jacques Lussier
Ottawa, Ontario, K1N 6N5

Supervisor:
Silvia Bonaccio, Ph.D.
Telfer School of Management; DMS 5149
University of Ottawa
55 Laurier Avenue East
Ottawa, Ontario, K1N 6N5
Phone: (613) 562-5800 Ext. 4690; Fax: (613) 562-5164

Invitation to Participate: You are invited to participate in the abovementioned research study conducted by graduate student Annie J. Girard and Professor Silvia Bonaccio.

Purpose of the Study: The purpose of this study is to understand how people make decisions, and how they feel when making these choices. Specifically, this study is designed to assess

decision-making anxiety and its relationships with decision-making competence and decision quality.

Participation: If you wish to participate in this study, please complete the following survey. Your decision to complete this survey will be interpreted as an indication of your consent to participate. The questionnaire should take you approximately 10 minutes to complete. You do not have to answer any question that you prefer not to answer. No personally identifying information will be collected.
Benefits: Your participation in this study will help researchers understand the decision-making process by looking at how people make decisions and how they feel about them.

Risks: There are no foreseeable risks from participating in this study. If at any point you feel that answering a question makes me uncomfortable, you can either skip it or withdraw from the study completely without any negative consequences whatsoever.

Confidentiality and anonymity: The information you will share will remain strictly confidential. The friend who referred you to our study will not have access to your survey responses. The answers to the questionnaires will be used only for research purposes. Your confidentiality and anonymity will be protected. Only aggregate information will be provided in the research reports.

Conservation of data: The electronic data collected will be kept in a secure manner in the principal researcher's office and will be password protected. The data will be kept for 10 years. In the meantime, the password will be changed periodically to ensure continued confidentiality. The data will not be made available to those outside of the researcher's research team.

Compensation. To thank you for your contribution to the research project, you will be given the option to enter your name in a draw to win an Amazon Canada gift card valued at 50 $ (Canadian dollars). The draw is open to all research participants who enter their name in the draw, regardless of whether they decide to withdraw from further participating in the research project.

Upon completion of the study, a name will be randomly selected amongst those who have entered and the person whose name is drawn will be informed by email. To win the prize, the person must correctly answer a skill testing question. If the person cannot be reached within 14 days from the date of the draw, the prize will be awarded to the second name that is randomly selected and so on until the prize has been awarded. The odds of winning a prize will depend on the number of eligible entries received. The prize must be accepted as awarded or forfeited and cannot be redeemed for cash.

Your name and email address that you provide when you enter the draw is collected for the purposes of contacting you if your name is selected in the draw. Your name and the contact information you have provided will be kept confidential and then destroyed once the prizes have been awarded. The draw is governed by the applicable laws of Canada.

Voluntary Participation: You are under no obligation to participate and if you choose to participate, you can withdraw from the study at any time and/or refuse to answer any questions,

without suffering any negative consequences. Furthermore, if you choose to withdraw, all data gathered until the time of withdrawal will be destroyed. If you wish to withdraw after you have submitted your answers, please contact us with the unique code your friend provided you, and we will delete all of the data associated with that code.

Acceptance: By completing the online survey, you agree to participate in the above research study conducted by and Annie J. Girard of the School of Psychology and Professor Silvia Bonaccio of the Telfer School of Management, at the University of Ottawa.

If you have any questions about the study, you may contact the researchers at the numbers mentioned herein. If you have any questions with regards to the ethical conduct of this study, you may contact the Protocol Officer for Ethics in Research, University of Ottawa, Tabaret Hall, 550 Cumberland Street, Room 154, Ottawa, ON K1N 6N5, tel.: (613) 562-5387 or ethics@uottawa.ca.

It is recommended to print a copy of the consent form to keep for your personal records.

ISPR Message

People make decisions quite often, and not everyone decides the same way, or feels the same way about the choice they face. We are interested in finding out more about the decision-making process. Participation in this study consists of answering an online questionnaire that will take approximately 45 minutes to fill out. You will then be given the opportunity to participate in the second phase of the study, which consists of referring a friend to fill out a questionnaire on your decision-making abilities. If you chose to participate in this second phase, you will be entered into a draw to win a 50$ Amazon Canada gift card. Please note that this study will be conducted solely in English.

Email Message

Hello (Name of Friend),

My name is Annie Girard and I am a Ph.D. Student in Clinical Psychology at the University of Ottawa. I am currently conducting a study on decision-making, under the supervision of Professor Silvia Bonaccio, Ph.D. You are receiving this email because you were referred to us by (name of ISPR participant) who is taking an introduction to psychology course at the University of Ottawa. Your friend has just participated in a research study, which asks about their decision-making ability. As part of this study, we hope to get a friend's perspective too! We are contacting you to invite you to participate in our study, in order to provide us with your perspective on your friend's decision-making ability.

Participation consists of answering a 10-minute survey. Should you chose to participate, you will be entered into a draw for a 50$ Amazon Canada gift card.

Please note that you are under no obligation to participate. The friend who referred you to our study will not have access to your survey responses and will not know whether you responded to the survey. If you decline to participate, simply delete this email. If you choose to answer the survey about your friend, the information you will share will remain strictly confidential. You can also stop answering the survey at any time and/or decline to answer specific questions.

If you would like to participate in our study, please follow this link :

When completing the survey, you will asked to provide this code, in order to link your responses with your friends' responses, while conserving both your anonymity: (CODE)

Thank you for your time and consideration,

Annie

Phase 2 Message

Thank you for filling out our survey!

You have been redirected to this page because you have chosen to participate in the second phase of this study, which consists of providing us with the email address of a friend. Your friend will receive an email asking them to fill out a short survey on your decision-making ability. They will not have access to your survey responses, and you will not be informed of their responses.

We ask that you pick a friend that you believe knows you well enough to answer questions about your decision-making ability.

Before providing us with your friend's contact information, please confirm that they consent to have their name and email address shared with us. If you are unable to reach your friend at this moment, you may save this page and return to it at a later date, or contact Annie Girard to receive the link, after you have obtained consent from your friend.

My friend has agreed that I share their name and email address with the researchers:
- Yes
- No

Please enter their name and email address below :

In order to conserve your anonymity, please follow the instructions below to create a unique code that will be used to link your responses to your friend's responses. Your unique code consists of : last digit of your year of birth, the two first letters of your street name, the last digit of your phone number, and the first letter of your high school name.
For example, someone born in 1997, living on Chapel street, whose number is 613-562-5800 and who went to Rideau High, will have a code of 7CH0R.

Enter the code here :

To thank you for participating in this second phase of the study, you are now eligible to participate in a draw for a 50$ Amazon Canada gift card. Please enter your contact information below :
Name :
Email address :

Thank you for your participation!

Measures – Focal

Trait Anxiety (Spielberger et al.,1983)

1. I feel pleasant.
2. I feel nervous and restless.
3. I feel satisfied with myself.
4. I wish I could be as happy as others seem to be.
5. I feel like a failure.
6. I feel rested.
7. I am "calm, cool and collected".
8. I feel that difficulties are piling up so that I cannot overcome them.
9. I worry too much over something that really doesn't matter.
10. I am happy.
11. I have disturbing thoughts.
12. I lack self-confidence.
13. I feel secure.
14. I make decisions easily.
15. I feel inadequate.
16. I am content.
17. Some unimportant thought runs through my mind and bothers me.
18. I take disappointments so keenly that I can't put them out of my mind.
19. I am a steady person.
20. I get in a state of tension or turmoil as I think over my recent concerns and interests.

When answering the following questions on decision-making, please think of your school-related decisions.

Decision-Making Anxiety Inventory (Unpublished scale; Girard & Bonaccio)
When I am faced with a decision regarding school:

1. I feel nervous.
2. I can't seem to focus.
3. I feel calm (R)
4. I get nauseated.
5. I feel anxious.
6. My heart races.
7. I find it hard to concentrate.
8. My stomach is often in knots.

Perceived Decision-Making Competence (Bruine de Bruin, Parker & Fischoff, 2012)

1. What percent of other people do you think are worse decision makers than you?
   - Response scale : 0-100%

Decision Quality (Wood & Highhouse, 2014)
The school-related decisions I make :

1. Are quality ones
2. Are good ones

3. End up working out well
4. Are regretted later
5. Usually make me happy

If you are considering participating in phase 2 of the study, please answer the following questions about the friend you would refer to us.

What percent of other people do you think are worse decision makers than your friend?

- Response scale : 0-100%

The decisions my friend makes:

1. Are quality ones
2. Are good ones
3. End up working out well
4. Are regretted later
5. Usually make me happy

In order to conserve your anonymity, please follow the instructions below to create a unique code that will be used to link your responses to your friend's responses. Your unique code consists of : last digit of your year of birth, the two first letters of your street name, the last digit of your phone number, and the first letter of your high school name.
For example, someone born in 1997, living on Chapel street, whose number is 613-562-5800 and who went to Rideau High, will have a code of 7CH0R.

Please enter the code here :

Measures – Peer

Participants will be instructed that « friend » refers to the person who referred them to our study.

In the email we sent you, you were provided with a unique code in order to allow us to link your responses, while conserving your anonymity.

Please enter this code here :

Demographic Questionnaire
Participants will be asked questions about their age, gender and ethnicity, using the same wording used by the ISPR pre-screen questionnaire. They will also be asked the following questions :

- What is your current occupation?
    - (Open-ended response)
- What is your relationship with the person who referred you to our study?
    - Friend
    - Significant Other
    - Sibling

- Other, please specify :

Screening Questionnaire

- I believe I can adequately rate my friend's decision-making ability
  - Response scale : 1 (Strongly Disagree) to 5 (Strongly Agree).

Perceived Decision-Making Competence (adapted from Bruine de Bruin, Parker & Fischoff, 2012)

What percent of other people do you think are worse decision makers than your friend?

- Response scale : 0-100%

When answering the following questions on decision-making, please think of your friend's school-related decisions.

Decision Quality (Wood & Highhouse, 2014)

The school-related decisions my friend makes:

1. Are quality ones
2. Are good ones
3. End up working out well
4. Are regretted later
5. Usually make me happy

Perceived Decision-Making Anxiety

1. When faced with a decision, my friend appears to experience anxiety.
2. My friend's decision-making anxiety interferes with their decision-making abilities.
3. My friend's decision-making anxiety interferes with their ability to make quality decisions.

The following questions are about you. This information will be used to see how similar or different you are to your friend.

Decision-Making Anxiety Inventory (Unpublished scale; Girard & Bonaccio)

When I am faced with a decision:

1. I feel nervous.
2. I can't seem to focus.
3. I feel calm (R)
4. I get nauseated.
5. I feel anxious.
6. My heart races.
7. I find it hard to concentrate.
8. My stomach is often in knots.

Trait Anxiety (Spielberger et al.,1983)

1. I feel pleasant.
2. I feel nervous and restless.
3. I feel satisfied with myself.
4. I wish I could be as happy as others seem to be.

5. I feel like a failure.
6. I feel rested.
7. I am “calm, cool and collected”.
8. I feel that difficulties are piling up so that I cannot overcome them.
9. I worry too much over something that really doesn’t matter.
10. I am happy.
11. I have disturbing thoughts.
12. I lack self-confidence.
13. I feel secure.
14. I make decisions easily.
15. I feel inadequate.
16. I am content.
17. Some unimportant thought runs through my mind and bothers me.
18. I take disappointments so keenly that I can’t put them out of my mind.
19. I am a steady person.
20. I get in a state of tension or turmoil as I think over my recent concerns and interests

Table B.1

Correlation Results for Focal Participants, by Gender

Variable	1	2	3	4	5	6	7	8	9
1. Decision-Making Anxiety	-	.63***	-.33***	-.01	.10	-.13*	-.07	-.05	-.12*
2. Trait Anxiety	.59***	-	-.39***	-.01	.16**	.09	-.04	.10	-.18**
3. Perceived Decision Quality	-.25**	-.45***	-	.07	.01	-.01	.03	.05	.28***
4. Resistance to Framing	-.12	-.16	.12	-	-.19**	-.03	.20**	.51***	-.01
5. Consistency in Risk Perception	.04	.06	.03	-.14	-	.07	-.16**	.36***	.02
6. Resistance to Sunk Costs	-.08	-.06	.09	-.15	.04	-	-.01	.52***	-.04
7. Under/Overconfidence	-.01	-.07	-.01	.12	.17	.12	-	.55***	.07
8. ADMC Composite Score	-.14	-.12	.12	.32***	.56***	.54***	.55***	-	.02
9. Perceived Decision-Making Competence	-.12	-.33***	.30**	.05	-.08	.23**	.03	.12	-

Note. Results for women ($N = 283$) above the diagonal, results for men ($N = 119$) below the diagonal; *$p < .05$; **$p < .01$, ***$p < .001$.

Table B.2

Regression Analyses for Women, for Decision-Making Anxiety on Objective and Perceived Decision-Making Competence, and Perceived Decision Quality

Variable	ADMC Composite Score	Resistance to Framing	Consistency in Risk Perception	Resistance to Sunk Costs	Under/Over confidence	Perceived DM Competence	Perceived Decision Quality
	b	*b*	*b*	*b*	*b*	*b*	*b*
DM Anxiety	-0.02	-0.00	0.02	-0.07*	-0.00	-1.88*	-0.15***
R^2	.002	.000	.011	.016*	.004	.015*	.109***

Note. $N = 283$. DM = Decision-Making; *$p < .05$; **$p < .01$, ***$p < .001$.

Table B.3

Regression Analyses for Men, for Decision-Making Anxiety on Objective and Perceived Decision-Making Competence, and Perceived Decision Quality

Variable	ADMC Composite Score	Resistance to Framing	Consistency in Risk Perception	Resistance to Sunk Costs	Under/Over confidence	Perceived DM Competence	Perceived Decision Quality
	b	*b*	*b*	*b*	*b*	*b*	*b*
DM Anxiety	-0.06	-0.05	-0.01	-0.05	-0.00	-1.99	-0.14***
R^2	.018	.015	.001	.007	.000	.015	.060**

Note. $N = 119$. DM = Decision-Making; *$p < .05$; **$p < .01$, ***$p < .001$;

Appendix C. Relevant Materials for Study 3

Ethics Approval Certificate

10/11/2017

Université d'Ottawa
Bureau d'éthique et d'intégrité de la recherche

University of Ottawa
Office of Research Ethics and Integrity

CERTIFICAT D'APPROBATION ÉTHIQUE | CERTIFICATE OF ETHICS APPROVAL

Numéro du dossier / Ethics File Number	H-10-17-161
Titre du projet / Project Title	Decision-Making Anxiety as an Antecedent of Job Search Behaviors Leading to Unfavorable Job Choice Outcomes
Type de projet / Project Type	Thèse de doctorat / Doctoral thesis
Statut du projet / Project Status	Approuvé / Approved
Date d'approbation (jj/mm/aaaa) / Approval Date (dd/mm/yyyy)	10/11/2017
Date d'expiration (jj/mm/aaaa) / Expiry Date (dd/mm/yyyy)	09/11/2018

Équipe de recherche / Research Team

Chercheur / Researcher	Affiliation	Role
Annie GIRARD	École de psychologie / School of Psychology	Chercheur Principal / Principal Investigator
Silvia BONACCIO	École de gestion Telfer / Telfer School of Management	Superviseur / Supervisor

Conditions spéciales ou commentaires / Special conditions or comments

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10/11/2017

Université d'Ottawa
Bureau d'éthique et d'intégrité de la recherche

University of Ottawa
Office of Research Ethics and Integrity

Le Comité d'éthique de la recherche (CÉR) de l'Université d'Ottawa, opérant conformément à l'*Énoncé de politique des Trois conseils* (2014) et toutes autres lois et tous règlements applicables, a examiné et approuvé la demande d'éthique du projet de recherche ci-nommé.

L'approbation est valide pour la durée indiquée plus haut et est sujette aux conditions énumérées dans la section intitulée "Conditions Spéciales ou Commentaires". Le formulaire « Renouvellement ou Fermeture de Projet » doit être complété quatre semaines avant la date d'échéance indiquée ci-haut afin de demander un renouvellement de cette approbation éthique ou afin de fermer le dossier.

Toutes modifications apportées au projet doivent être approuvées par le CÉR avant leur mise en place, sauf si le participant doit être retiré en raison d'un danger immédiat ou s'il s'agit d'un changement ayant trait à des éléments administratifs ou logistiques du projet. Les chercheurs doivent aviser le CÉR dans les plus brefs délais de tout changement pouvant augmenter le niveau de risque aux participants ou pouvant affecter considérablement le déroulement du projet, rapporter tout évènement imprévu ou indésirable et soumettre toute nouvelle information pouvant nuire à la conduite du projet ou à la sécurité des participants.

The University of Ottawa Research Ethics Board, which operates in accordance with the *Tri-Council Policy Statement* (2014) and other applicable laws and regulations, has examined and approved the ethics application for the above-named research project.

Ethics approval is valid for the period indicated above and is subject to the conditions listed in the section entitled "Special Conditions or Comments". The "Renewal/Project Closure" form must be completedfour weeks before the above-referenced expiry date to request a renewal of this ethics approval or closure of the file.

Any changes made to the project must be approved by the REB before being implemented, except when necessary to remove participants from immediate endangerment or when the modification(s) only pertain to administrative or logistical components of the project. Investigators must also promptly alert the REB of any changes that increase the risk to participant(s), any changes that considerably affect the conduct of the project, all unanticipated and harmful events that occur, and new information that may negatively affect the conduct of the project or the safety of the participant(s).

Riana MARCOTTE
Responsable d'éthique en recherche / Protocol Officer
Pour/For **Daniel LAGAREC** Président(e) du/ Chair of the **Comité d'éthique de la recherche en sciences sociales et humanités / Social Sciences and Humanities Research Ethics Board**

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Consent Message

Title of the study: Decision-Making Anxiety as an Antecedent of Job Search Behaviors Leading to Unfavorable Job Choice Outcomes

Principal Investigator:
Annie J. Girard
Clinical Psychology Graduate Student
School of Psychology; VNR 2090
University of Ottawa
136 Jean Jacques Lussier
Ottawa, Ontario, K1N 6N5

Supervisor:
Silvia Bonaccio, Ph.D.
Telfer School of Management; DMS 5149
University of Ottawa
55 Laurier Avenue East
Ottawa, Ontario, K1N 6N5
Phone: (613) 562-5800 Ext. 4690; Fax: (613) 562-5164

Invitation to Participate: You are invited to participate in the abovementioned research study conducted by the graduate student Annie Girard in the context of a PhD thesis, under the supervision of Dr. Bonaccio.

Purpose of the Study: The purpose of this study is to understand how people make decisions, in the context of looking for a job. Specifically, this study is designed to assess decision-making anxiety and its relationships with job search behaviors and job choice outcomes.

Participation: If you wish to participate in this study, please complete the following survey. Your decision to complete this survey will be interpreted as an indication of your consent to participate. The questionnaire should take you approximately 15 to 20 minutes to complete. You do not have to answer any question that you prefer not to answer. No personally identifying information will be collected.

Benefits: Your participation in this study will help researchers understand the decision-making process by looking at how people make, when looking for a job.

Risks: There are no foreseeable risks from participating in this study. If at any point you feel that answering a question makes you uncomfortable, you can either skip it or withdraw from the study completely without any negative consequences whatsoever.

Confidentiality and anonymity: The information you will share will remain strictly confidential. The answers to the questionnaires will be used only for research purposes. Your

confidentiality and anonymity will be protected. Only aggregate information will be provided in the research reports.

Privacy: Your responses will be collected via Qualtrics: an online survey company located in the USA and subject to U.S. laws. In particular, the US Patriot Act allows authorities access to the records of internet service providers. This survey does not ask for personal identifiers or any information that may be used to identify you. The websurvey company servers record incoming IP addresses but no connection is made between your data and your computer's IP address. If you choose to participate in this survey, you understand that your responses to the survey questions will be initially stored and accessed in the USA. The Qualtrics privacy policy can be found at the following link: http://www.qualtrics.com/privacy-statement. Once all data is collected it will be removed from Qualtrics and stored on password protected computers subject to Canadian laws.

Conservation of data: The electronic data collected will be kept in a secure manner in the principal researcher's office and will be password protected. The data will be kept for 10 years. In the meantime, the password will be changed periodically to ensure continued confidentiality. The data will not be made available to those outside of the researcher's research team.

Compensation: You will receive a small token of appreciation for participating in this study, as detailed in the invitation email you received from Qualtrics.

Voluntary Participation: You are under no obligation to participate and if you choose to participate, you can withdraw from the study at any time and/or refuse to answer any questions by simply closing your browser. If you choose to withdraw before finishing the survey your data will not be stored in either Qualtrics or the researcher's computer. If you close your browser before the end of the study you will still receive the participation compensation as stated in the invitation email you received from Qualtrics.

Funding: funding for this research is provided by the Telfer School of Management.

Acceptance: By completing the online survey, you agree to participate in the above research study conducted by and Annie J. Girard of the School of Psychology and Professor Silvia Bonaccio of the Telfer School of Management, at the University of Ottawa.

If you have any questions about the study, you may contact the researchers at the numbers mentioned herein. If you have any questions with regards to the ethical conduct of this study, you may contact the Protocol Officer for Ethics in Research, University of Ottawa, Tabaret Hall, 550 Cumberland Street, Room 154, Ottawa, ON K1N 6N5, tel.: (613) 562-5387 or ethics@uottawa.ca.

It is recommended to print a copy of the consent form to keep for your personal records.

Qualtrics Message

Thank you for your interest in our survey! In the following page you will be presented with the consent form assuring you that our study complies with the code of ethics in research of the University of Ottawa. After you click on the "next" button on the bottom of that page you will be taken to our survey questions.

The following questions will take about 15 minutes of your time and will ask about how you feel when faced with decisions, as well as your approach to seeking a job. You will also be asked questions about your employment history and current employement status. Of course, there are no right or wrong answers.

In about two months, we will send you a follow up survey. Your participation in the second survey is very important to the success of our study, and we hope that you will complete that second survey as well!

We thank you in advance for your help with both of our surveys!

Measures

TIME 1

Sociodemographic and employment questions:

- Are you currently a student?
  - Yes or No
    - If yes, what degree are you pursuing?
      - Options: Associate's degree, Bachelor's degree, Master's degree, Doctorate or Professional degree, Not listed (please specify)
    - If not, what is your highest degree obtained?
      - Options: High School, Associate's degree, Bachelor's degree, Master's degree, Doctorate or Professional degree, Not listed (please specify)
- What is your current employment status?
  - Employed
    - If employed, please specify type of employment:
      - Full-time, Part-time, Casual, Co-op, internship, Not listed (please specify)
  - Unemployed
- Is the job you are looking for related to the field of study of your highest degree?
  - Options: Yes or No

Decision-Making Anxiety Inventory (Unpublished scale; Girard & Bonaccio)

When I am faced with a decision:

9. I feel nervous.
10. I can't seem to focus.
11. I feel calm (R)
12. I get nauseated.
13. I feel anxious.
14. My heart races.
15. I find it hard to concentrate.
16. My stomach is often in knots.

Trait Anxiety (Spielberger et al.,1983)

21. I feel pleasant.
22. I feel nervous and restless.
23. I feel satisfied with myself.
24. I wish I could be as happy as others seem to be.
25. I feel like a failure.
26. I feel rested.
27. I am "calm, cool and collected".
28. I feel that difficulties are piling up so that I cannot overcome them.
29. I worry too much over something that really doesn't matter.
30. I am happy.
31. I have disturbing thoughts.
32. I lack self-confidence.

33. I feel secure.
34. I make decisions easily.
35. I feel inadequate.
36. I am content.
37. Some unimportant thought runs through my mind and bothers me.
38. I take disappointments so keenly that I can't put them out of my mind.
39. I am a steady person.
40. I get in a state of tension or turmoil as I think over my recent concerns and interests.

Job Search Intensity (Cote et al., 2006; Saks & Ashforth, 2002; Blau, 1994)

Indicate the frequency to which you perform each of the following tasks within the last month:

1. Read the help wanted/classified ads in a newspaper, journal, or professional association
2. Listed yourself as a job applicant in a newspaper, journal, or professional association
3. Prepared/revised your résumé
4. Sent out résumés to potential employers
5. Filled out a job application
6. Read a book or an article about getting a job or changing jobs
7. Had a job interview with a prospective employer
8. Talked with friends or relatives about possible job leads
9. Contacted an employment agency, executive search firm, or campus career center
10. Spoke with previous employers or business acquaintances about their knowing of potential job leads
11. Telephoned prospective employers
12. Used current within company resources (e.g., colleagues) to generate potential job leads
13. Conducted information interviews to find out about careers and jobs that you are interested in pursuing
14. Analyzed your interests and abilities to determine the best job for you
15. Used the internet to locate employment opportunities

Job Search Effort (Blau, 1993)

1. I spend a lot of time looking for job opportunities
2. I devote much effort to looking for a job
3. I focus my time and effort on job search activities
4. I give my best effort to find a job

Job Search Strategy (Crossley & Highhouse, 2005)

1. My job search is more or less haphazard
2. My approach to gathering job-related information could be described as random
3. I use a ''hit or miss'' approach when gathering information about my job
4. I do not really have a plan when searching for a job
5. I follow up on every lead to make sure I don't miss any golden opportunities
6. I try to get my resume out to as many organizations as possible
7. I follow up on most leads, even long shots
8. I gather as much information about all the companies that I can
9. I examine all available sources of job information (e.g., employment centers, friends, internet sites, etc.)

10. I gather information about all possible job opportunities, rather than setting out for something specific
11. I gather information only for job openings that look like what I want
12. I gather information only for jobs that I am really interested in
13. My information gathering efforts are focused on specific jobs
14. I gather information only for jobs that I know I could qualify for
15. I target my job search toward a small number of employers
16. I have a clear idea of what qualities I want in a job

TIME 2

Employment Questions

- How many job offers have you received in the past 2 months?
- How many job offers have you accepted in the past 2 months?
- What is your current employment status?
    - IF new job:
        - What type of job?
            - Options: Full-time, Part-time, Casual, Co-op, internship, Not listed (please specify)
        - Is it related to your field of study of your highest degree?

Decision-Making Anxiety Inventory (Unpublished scale; Girard & Bonaccio)

1. When I am faced with a decision:
2. I feel nervous.
3. I can't seem to focus.
4. I feel calm (R)
5. I get nauseated.
6. I feel anxious.
7. My heart races.
8. I find it hard to concentrate.
9. My stomach is often in knots.

Trait Anxiety (Spielberger et al.,1983)

1. I feel pleasant.
2. I feel nervous and restless.
3. I feel satisfied with myself.
4. I wish I could be as happy as others seem to be.
5. I feel like a failure.
6. I feel rested.
7. I am "calm, cool and collected".
8. I feel that difficulties are piling up so that I cannot overcome them.
9. I worry too much over something that really doesn't matter.
10. I am happy.
11. I have disturbing thoughts.
12. I lack self-confidence.
13. I feel secure.
14. I make decisions easily.

15. I feel inadequate.
16. I am content.
17. Some unimportant thought runs through my mind and bothers me.
18. I take disappointments so keenly that I can't put them out of my mind.
19. I am a steady person.
20. I get in a state of tension or turmoil as I think over my recent concerns and interests.

Job Search Intensity (Cote et al., 2006; Saks & Ashforth, 2002; Blau, 1994)

Indicate the frequency to which you performed each of the following tasks in the past 2 months:

1. Read the help wanted/classified ads in a newspaper, journal, or professional association
2. Listed yourself as a job applicant in a newspaper, journal, or professional association
3. Prepared/revised your résumé
4. Sent out résumés to potential employers
5. Filled out a job application
6. Read a book or an article about getting a job or changing jobs
7. Had a job interview with a prospective employer
8. Talked with friends or relatives about possible job leads
9. Contacted an employment agency, executive search firm, or campus career center
10. Spoke with previous employers or business acquaintances about their knowing of potential job leads
11. Telephoned prospective employers
12. Used current within company resources (e.g., colleagues) to generate potential job leads
13. Conducted information interviews to find out about careers and jobs that you are interested in pursuing
14. Analyzed your interests and abilities to determine the best job for you
15. Used the internet to locate employment opportunities

Job Search Effort (Blau, 1993)

1. I spent a lot of time looking for job opportunities
2. I devoted much effort to looking for a job
3. I focused my time and effort on job search activities
4. I gave my best effort to find a job

Job Search Strategy (Crossley & Highhouse, 2005)

1. My job search was more or less haphazard
2. My approach to gathering job-related information could be described as random
3. I used a ''hit or miss'' approach when gathering information about my job
4. I did not really have a plan when searching for my job
5. I followed up on every lead to make sure I didn't miss any golden opportunities
6. I tried to get my resume out to as many organizations as possible
7. I followed up on most leads, even long shots
8. I gathered as much information about all the companies that I could
9. I examined all available sources of job information (e.g., employment centers, friends, internet sites, etc.)
10. I gathered information about all possible job opportunities, rather than setting out for something specific

11. I gathered information only for job openings that looked like what I wanted
12. I gathered information only for jobs that I was really interested in
13. My information gathering efforts were focused on specific jobs
14. I gathered information only for jobs that I knew I would qualify for
15. I targeted my job search toward a small number of employers
16. I had a clear idea of what qualities I wanted in a job

Satisfaction with decision-making process (Crossley & Highhouse, 2005)
Version if unemployed:

1. I am happy with the way I went about searching for jobs
2. I would continue to look for a job using the same techniques that I am currently using
3. I am satisfied with the process I used to find jobs to apply for
4. I am satisfied with my decisions in my current job search

Version if employed:

1. I am happy with the way I went about finding this job
2. I would look for another job using the same techniques that I used to find this one
3. I am satisfied with the process I used to find jobs to apply for
4. I am satisfied with how I decided upon which job to take