

**PROCRASTINATION AND AROUSAL-BASED PERSONALITY TRAITS: AN
EXAMINATION OF PERSONALITY TRAITS AND BELIEFS ABOUT
SENSATION-SEEKING MOTIVES FOR ACADEMIC PROCRASTINATION**

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the Faculty of Graduate Studies and Research
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Master of Arts Degree

by

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Abstract

Arousal procrastination was investigated to determine: 1) if the General Procrastination Scale (GP) measures procrastination motivated by arousal, and 2) whether sensation seeking (SS), extraversion (E), and the reducer index (R) account for variance in beliefs about the motivation for academic procrastination. Participants were 311 undergraduate students (60.1% female), primarily Caucasian (63.3%), with a mean age of 20.9 ($SD = 3.08$). An online questionnaire package included measures of procrastination and 3 arousal-based personality inventories. A factor analysis of the GP and the Sensation Seeking Scale-V (SSS-V) produced 6 factors with the GP and SSS-V items loading on separate factors, implying no relation. A regression analysis revealed that SS, E, and R together accounted for 5.2% of the variance in participants' arousal-related beliefs motivating their procrastination. These results challenge the existing literature but indicate that some individuals believe that their procrastination is motivated by a need for heightened arousal.

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Introduction

Procrastination can be defined as the voluntary, irrational postponement of an intended course of action despite the knowledge that this delay will come at a cost to or have negative effects on the individual (Ferrari, Johnson, & McCown, 1995; Lay, 1986; Milgram, 1991; Steel, 2007). What is particularly important in this definition is that even though procrastination is delay, not all delay can be accurately characterized as procrastination. This distinction hinges upon the individual's intended action. During a given day an individual is faced with many tasks and activities to complete. If an individual's initial intention is to delay working on a specific task in order to address more pressing and urgent matters, it would be inaccurate to classify this initial delay as procrastination. In fact, this delay might be considered sagacious or more simply the ability to manage priorities. Conversely, if an individual intends to complete a certain task within a certain time frame, and then voluntarily and needlessly delays working on this task, procrastination would be an accurate descriptor.

Procrastination is largely characterized as being harmful and foolish, with many studies linking it to reduced feelings of well-being and to a decrease in task performance (e.g., Bennett, Pychyl, & Wohl, 2008; Milgram, 1991; Steel, 2007). However, despite the largely negative effects associated with this irrational behaviour, procrastination remains pervasive, with people from all walks of life reporting problematic task delay. Procrastination is so prevalent that estimates suggest somewhere between 80 to 95% of college students have engaged in this type of behaviour with 50% identifying it as persistent and problematic (Steel, 2007). Furthermore, one quarter of adults label themselves as chronic procrastinators; a maladaptive delay that results in an overall

inefficient lifestyle (Ferrari, Diaz-Morales, O'Callaghan, Diaz, & Argumedo, 2007; Ferrari & Tice, 2000).

Despite the prevalence of both general and academic procrastination (e.g., Schouwenburg, Lay, Pychyl & Ferrari, 2004), the various reasons and motivations underlying task delay remain somewhat unclear. Many researchers have sought to understand these reasons and motivations by conceptualizing procrastination solely as a way to avoid or escape aversive tasks. This type of *avoidance* procrastination is exemplified by rationalizations such as: "This task is too boring, I'll come back to it later" or "I'm not sure how to start my research paper, I'll come back to it when I'm thinking more clearly" (e.g., Schouwenburg, 1992). Procrastination, stemming from this motivation, is supported by a sizable amount of research (e.g., Ackerman & Gross, 2007; Blunt & Pychyl, 2000; Chu & Choi, 2005; Ferrari & Scher, 2000; Ferrari & Tice, 2000; Fritzsche, Young, & Hickson, 2003; Steel, 2007). Of interest to the present investigation however, is the notion that some individuals engage in procrastination for an entirely different set of reasons.

In contrast to the traditional avoidance procrastinator (i.e., attempting to evade an unpleasant task), an *arousal* procrastinator (i.e., an individual who intentionally delays a task in order to seek some form of arousal) has also been proposed. This viewpoint is demonstrated well by the individual who procrastinates with the hopes of attaining a "rush" from completing a task near the deadline (Ferrari, 1992). A common rationalization stemming from this motivation to procrastinate could be: "I'll put this assignment off for now because I work best under pressure." Although intentionally procrastinating for arousal-based incentives seems counterintuitive and irrational to

many, there is some empirical evidence and theoretical support that helps bolster this supposition. For example, it has been demonstrated that performance on various tasks is improved when individuals are physiologically aroused to their optimal level (e.g., Geen, 1984). When contextualizing procrastination as an attempt to increase one's arousal, in order to meet one's optimal level, this supposition no longer seems peculiar or so far fetched as a rationale for procrastination.

Although the relation between sensation seeking and procrastination has only been examined in a limited number of studies (e.g., Ferrari, 1992), arousal-based theories of personality may help to conceptually strengthen sensation seeking's tenuous relationship to procrastination. Many arousal-based theories of personality such as Eysenck's well-known theory of extraversion and Zuckerman's research on sensation seeking, have attempted to explain the individual differences in the responses to (Dornic & Ekehammar, 1990), the urges to seek (Lambert & Levy, 1972), and the optimal levels of (Geen, 1984) sensory stimulation. This arousal-based body of literature offers many common conclusions, even though the theories differ in name. I propose that through a synthesis of this literature a strong conceptual framework relating arousal-based theories of personality to procrastination can be achieved.

In my proposed thesis research, I seek to clarify and further understand the relationship between arousal-based personality traits (e.g., sensation seeking, extraversion, and the augments/reducer dimension) and procrastination. Specifically, by drawing parallels between the various arousal-based theories of personality, I argue that it is reasonable to assume that there may be a subset of people who engage in

procrastinatory behaviour in order to increase their arousal levels by working on tasks at the “eleventh hour.”

My thesis presents this research idea beginning with an exploration of the arousal-based theories of personality. These theories are discussed because it is believed that they provide a strong theoretical framework helping to contextualize reasons for arousal-based procrastination, whereby individuals procrastinate in an attempt to potentiate arousal levels to an optimal level through task delay (i.e., procrastination). Following from this discussion, previous research studies investigating the link between procrastination and sensation seeking are reviewed paying close attention to any shortcomings that could be improved upon to help further clarify sensation seeking’s tenuous relationship to procrastination.

Arousal-Based Theories of Personality

It is commonly understood that no two individuals perceive the same sensory stimulus in the exact same way. In fact, this individual difference is central to many arousal-based theories of personality. Through research on sensory deprivation (e.g., Zuckerman & Haber, 1965), boredom induction (e.g., Larsen & Zarate, 1991), and preferred noise level (e.g., Geen, 1984), this perceptual individual difference has been supported, demonstrating that certain individuals become distressed when they are receiving less than or more than their “optimal” level of sensory stimulation (Hebb, 1955).

Many studies investigating the individual differences in preferred level of stimulation have reached similar conclusions even when different theoretical assumptions and experimental designs have been employed. Specifically, the theories of *extraversion-*

introversion (Eysenck, 1967), the *reducer-augmenter* theory (Petrie, 1967) and *sensation seeking* (Zuckerman & Haber, 1965) are three examples of different theoretical approaches attempting to account for similar arousal-related individual differences. At this point however, it is unclear exactly what characteristics these theories share and how each accounts for individual differences in preferred level of stimulation.

At the heart of these arousal-based theories of personality is the notion of optimal level of arousal (Hebb, 1955), whereby an individual seeks to attain stimulation at a level that is best suited for task completion. This concept is predicated on the notion that arousal level directly relates to performance (Watters, Martin, & Schreter, 1997). For example, when a deviation in the optimal level of arousal is encountered, in either an under-aroused or over-aroused direction, deficits in performance can often be the result. It is helpful to visualize this relationship taking into account Yerkes-Dodson Law (Yerkes & Dodson, 1908; as cited in Watters, Martin, & Schreter, 1997). This relationship, the inverted-U function, is at the heart of all of the arousal-based theories of personality explored in this review.

Extraversion. Extraversion, much like other arousal-based theories of personality, has been implicated as a contributing factor in the engagement of stimulating behaviour. In fact, extraversion has been linked directly to risk-taking behaviours (Nicholson, Soane, Fenton-O’Creevy, & Willman, 2005). The main goal of these types of behaviours is to compensate for any deviation in arousal and return the body to an optimal state (Dornic & Ekehammer, 1990). Conversely, introversion, the polar opposite of extraversion, is marked by a greater sensitivity or reactivity to physical stimulation. Therefore, with the same level of stimulation, an introvert, as compared to an extravert, will become more

aroused in terms of both central and autonomic processes (e.g., Stelmack, 1990). As alluded to, the major supposition of the extraversion-introversion dichotomy is that every individual (whether extravert or introvert) has an optimal level of arousal to which he or she strives to achieve (Eysenck, 1967).

Given this underlying drive to match external stimulation to some optimal level, what would be the potential consequences if extraverts and introverts were subjected to situations where the external stimulation was opposite to their preferred level? Geen (1984) conducted an often-cited study that simultaneously demonstrated that extraverts and introverts differed in their preferred level of noise intensity (i.e., sensory stimulation) and that these levels of stimulation also affected their performance on a learning task.

To demonstrate the relationship between preferred level of stimulation and performance on a learning task, participants were asked to adjust the volume on a tape recorder to a level that was just right for them to comfortably complete the experimental learning task. As predicted, extraverts chose a higher level of noise intensity than introverts (Geen, 1984). These results are consistent with both Eysenck's theory of extraversion (1967) and other arousal-based theories of personality. Moreover, these findings help demonstrate the individual differences in preferred level of stimulation and the differential sensitivity and reactivity to sensory stimuli experienced by both extraverts and introverts.

Geen (1984) added an interesting twist to his experimental design by taking the preferred noise level of extraverts and subjecting introverts to it while they worked to complete the learning task. Likewise, the preferred noise levels of introverts were also assigned to corresponding yoked extraverts. Arousal levels and performance on the

learning task were then observed. When introverts were subjected to the increased noise level of their extraverted counterparts they became more aroused, as measured by both pulse rate and skin resistance responses. In addition, the introverts who were yoked to the extraverts' preferred stimulation level had poorer performance in the learning task (Geen, 1984). Interestingly however, when extraverts were subjected to the preferred noise level of their introverted counterparts no deficits in performance were noticed even though there was a decrease in arousal (Geen, 1984).

Geen's (1984) study is an important example of this research because it demonstrates the individual differences in preferred level of stimulation between two different groups of people (i.e., extraverts and introverts). It is clearly demonstrated that extraverts prefer more intense stimulation than do introverts and that what an extravert finds to be an optimal level of stimulation an introvert finds to be overly stimulating.

Similar findings have been demonstrated in more recent research as well. For example, Belojevic, Slepcevic, and Jakovljevic (2001) established that when compared to extraverts, introverts suffered from fatigue, lacked concentration, and showed deficits in performance when subjected to an experimental noise condition. In addition, a study conducted by Cassidy and MacDonald (2007) examining the cognitive task performances of extraverted and introverted individuals revealed that they responded differently when exposed to an experimental noise condition. Specifically, the experimental conditions consisted of participants being subjected to either music with a high arousal potential, music with a low arousal potential, normative background noise, or silence. The cognitive tasks used to evaluate performance included: free recall, immediate recall, numerical and delayed recall, and the Stroop test. The results indicated that performance

on all cognitive tasks was reduced for both introverts and extraverts in the presence of any background noise when compared to the silence condition. However, the authors hypothesized that this relationship might be moderated by introverted or extraverted tendencies. This hypothesis was partially supported as individuals scoring highly on the introvert dimension performed more poorly than extraverted individuals on the Stroop test when subjected to high arousal music.

Theoretically, some tenants of Eysenck's theory of extraversion have been slightly modified since Geen's 1984 study. In the early 1990s, it was demonstrated that extraverts and introverts do not differ in their base levels of arousal, as was advocated by Geen (1984), but rather in their sensitivity/reactivity (i.e., arousability) to sensory stimuli (Stelmack, 1990). The notion that base levels of arousal differed for introverts and extraverts was discredited primarily due to the finding that introverts and extraverts shared similar skin conductance ratings in arousal neutral situations (Stelmack, 1990). In other words, there were no differences in base levels of arousal, as measured by skin conductance (a physiological measure of arousal), when extraverts and introverts were placed in arousal neutral (i.e., non-stimulating) environments. In addition, the differential reaction to stimulation, experienced by both extraverts and introverts, has been demonstrated to reasonably account for some social behaviours. For example, introverts demonstrate a preference for quiet, tranquil environments (Stelmack, 2004), likely due to their amplified reaction to sensory stimulation.

Taken together, research on extraversion-introversion and optimal levels of arousal indicates that extraverts react differently to external stimulation and prefer higher levels of external stimulation compared to introverts. The notion that extraverts and

introverts differ in their physiological reactions to sensory stimulation is very closely aligned with another arousal-based theory of personality, the augementer-reducer theory.

Reducer-augementer theory. Reducer-augementer theory was formulated from research on pain tolerance, which brought to light the idea that different individuals react to the same physical stimulus with varying amounts of self-reported pain (Petrie, 1967). Reducer/augementer theory is, at its crux, a way of understanding self-regulatory behaviours (Larsen & Zarate, 1991). A *reducer* is an individual who attenuates incoming sensory stimuli, whereas an *augementer* potentiates incoming sensory stimuli (Petrie, 1967). Accordingly, research investigating pain tolerance among these groups of individuals revealed that reducers were more pain tolerant, presumably due to their inherent dampening of incoming sensory stimuli (Larsen & Zarate 1991; Schwerdtfeger, 2007). Generally, it is hypothesized that there is a “centrally located stimulus intensity modulation mechanism” that is responsible for the differences in sensory response (Larsen & Zarate, 1991, p. 714).

Of importance to the present research is the fact that the reducer-augementer theory provides a strong theoretical framework for the predictions of stimulation seeking behaviours. For example, given the aforementioned definitions it seems clear that reducers, as compared to augmenters, would seek out stronger forms of stimulation in an effort to boost their reduced level of stimulation. In fact, this is what the research has shown. Much like extraverts, reducers have been shown to express a stronger urge to seek stimulation: they sleep fewer hours at night (Schwerdtfeger, 2007), demonstrate a preference for contact sports (Ryan & Foster, 1967), illicit stimulant drugs (Deaux,

1976), and have increased social interactions (e.g., Herzog, Williams & Weintraub, 1985; Mishara & Baker, 1981).

Following from research conducted on extraverted and introverted participants, reducers and augmenters have also been compared on their differential sensitivity to noise. In a 2007 study conducted by Schwerdtfeger, it was demonstrated that reducers preferred the volume of a radio to be louder than did augmenters (even after controlling for hearing loss). Furthermore, the reducers in this sample self-reported taking psychoactive substances more frequently than did augmenters.

In the second section of this study (Schwerdtfeger, 2007), differences in pain tolerance and motor activity were assessed. Again, these results are largely in line with previous research on the augmentor/reducer dimension. It was demonstrated that reducers performed faster on the highly stimulating rapid-tapping test when compared to augmenters, but that no group differences were observed on the weakly stimulating computer mouse-tracking test. The explanation offered by Schwerdtfeger to account for these group differences is that reducers utilize motor activity as a way to increase arousal level. Finally, the pain tolerance test, which entailed a pin 3mm in diameter being depressed with varying amounts of pressure on the participants' index fingers, revealed that reducers were able to tolerate this stimulus better and for longer amounts of time than were augmenters.

Perhaps most interestingly and relevant to my proposed research with procrastination is the study conducted by Larsen and Zarate (1991) which examined the role of emotion in the regulation of arousal levels among reducers and augmenters. After inducing boredom in a set of experimental participants, two options were given; the

participants could either: a) continue to fill out various questionnaires seeking mundane personal information, or b) watch a film depicting very negative, emotional scenes that would result in physical arousal (e.g., increased heart and breathing rate) but would be emotionally upsetting. Interestingly, some participants chose to partake in the negative-emotion-inducing option. These participants, not surprisingly, had scores characteristic of reducers (Larsen & Zarate, 1991). Furthermore, these participants rated the boredom induction task as significantly less interesting, more unpleasant, less difficult, and were less willing to repeat the experiment as compared to the other participants who chose the first experimental option (Larsen & Zarate, 1991). Overall, this study demonstrated that reducers suffer more than augmenters from the effects of boredom (i.e., low arousal). Moreover, it was demonstrated that reducers would attempt to alleviate their boredom by engaging in seemingly irrational behaviours like consenting to participate in a task that was warned to induce negative affect.

Theoretically, the application of reducer-augmenter theory to the notion of an arousal procrastinator is justifiable. Taking into account the fact that reducers suffer (more so than augmenters) in boring situations and that reducers readily engage in tasks geared at emotional stimulation (even when their emotions may be stimulated in a negative direction), it is plausible to assume that reducers may also seek to increase their arousal through behaviours such as procrastination when confronted with a tedious or boring task. Waiting until the last minute to complete a task may increase stimulation by the stress of time pressure.

In sum, reducer-augmenter theory provides a strong theoretical context for understanding the concept of arousal procrastination. It might be expected that reducers

could use task delay through procrastination as a means to get the additional stimulation they seek.

This focus on increased stimulation brings me to the last of the arousal-based personality traits we need to consider in relation to arousal procrastination, that is, sensation seeking. Much like reducers, sensation seekers have also been shown to engage in arousal-related pursuits when deprived of sensory stimulation.

Sensation seeking. Sensation seeking as a trait arose from studies on sensory deprivation in the mid 1960s (e.g., Zuckerman & Haber, 1965) when it was demonstrated that not all participants suffered equally from the effects of being sensory deprived. A recent definition of sensation seeking is: "...a trait defined by the seeking of varied, novel, complex, and intense sensations and experiences, and the willingness to take physical, social, legal, and financial risks for the sake of such experiences" (Zuckerman & Kuhlman, 2000, p. 1000). It is clear that this definition evokes images of very sensational behaviours like skydiving, driving fast cars, or gambling; however, the sensation seeking proclivity can be nicely demonstrated through much more mundane behaviours and methods.

The motivation to seek stimulation when placed in a sensory deprived atmosphere is one type of experimental method that is effective in demonstrating the individual differences between high sensation seekers and low sensation seekers. For instance, Lambert and Levy (1972) predicted that high sensation seekers, as compared to low sensation seekers, would show a greater need for sensory stimulation when isolated in a darkened room for two hours. In this experiment participants were given a remote control with a single button. When this button was pressed, participants would receive

visual stimulation in the form of a slide being projected upon a viewing screen. As was predicted, high sensation seekers viewed slides more frequently than low sensation seekers, demonstrating their urge for increased stimulation (Lambert & Levy, 1972). It should be noted that high sensation seekers only differed from low sensation seekers in the latter stages of the two-hour deprivation period, indicating that their need for stimulation was not an immediate urge, but rather built up over time. Essentially, by the end of the sensory deprivation period, high sensation seekers were attempting to obtain stimulation at a significantly higher rate than that of low sensation seekers. At the beginning stages of the experiment both high and low sensation seekers dealt with the lack of stimulation evenly (Lambert & Levy, 1972).

These findings support the notion that not all individuals experience the same amount of discomfort when deprived of sensory stimulation for a short amount of time. Furthermore, it was demonstrated that trait sensation seeking is a viable predictor of this relationship. The participants who experienced the most discomfort while sensory deprived were marked by higher sensation seeking scores and sought to alleviate their distress through engaging in arousal related behaviour (i.e., pushing a button to view a picture). Clearly, sensation seeking is a very apt label for these individuals, as they actively sought visual stimulation in this experiment as a means to alleviate their distress by increasing their arousal level.

Individual differences in sensation seeking are easily demonstrated through experimentally derived behaviours (like pressing a button in order to view a projected image); however, this review would be remiss without briefly mentioning that sensation seeking is also correlated with overtly risky behaviours that are not commonly engaged in

by the general population. Some of these activities include engaging in risky sports, risky psychological experiments, dangerous occupations, committing crime, smoking, using illicit drugs, partaking in dangerous sexual practices, and gambling (Zuckerman & Kuhlman, 2000). In addition to these behaviours, much research has been conducted on sensation seeking and reckless driving. Sensation seeking has been linked to driving anger and aggressive/risky driving practices (Dahlen, Martin, Ragan, & Kuhlman, 2005). High, as compared to low sensation seekers, have been shown to drive faster, are less likely to use seatbelts, and drive while intoxicated more frequently (Furnham, 2004).

When considering the participation in risky sports, a wide variety of experimental designs have been implemented. Some of these experiments compare sensation seeking scores between individuals participating in sports that are deemed equally risky, while other studies use control groups of individuals who do not participate in risky sports. Not surprisingly, when comparing sensation seeking scores between different levels of sport risk, significant differences in this trait are noted (Goma-i-Freixanet, 2004). Conversely, when comparing individuals who participate in sports of equal risk, no differences in sensation seeking scores are found (Goma-i-Freixanet, 2004).

It is important to keep in mind, that even though sensation seeking has been correlated to both the participation in risky activities and to the greater usage of experimental interventions in sensory deprived environments, the overarching goal of these types of behaviours is to regulate arousal level with the intent of reaching a more preferable state. Sensation seeking can clearly be viewed as the *approach* behaviour involved in the classic risk/reward conflict, whereby individuals risk something (e.g., their safety or finishing an assignment on time) in the hopes of achieving some reward as

a consequence of their behaviour (e.g., physiological stimulation). It has been demonstrated that high sensation seekers have a propensity to engage in a variety of risky behaviours because they appraise the risk involved with these activities as lower than low sensation seekers do (Horvath & Zuckerman, 1993).

The practice of ascribing low levels of risk to potentially risky scenarios is maintained even for activities in which high sensation seekers have never previously participated (Horvath & Zuckerman, 1993). This process can be applied to a variety of situations and activities, procrastination included. For example, it is feasible that a high sensation seeker may undervalue the academic risk (i.e., receiving a poor grade) associated with delaying the completion of an assignment in order to engage in a sensation seeking pursuit. In fact, some researchers have argued that the process of delaying an academic task and completing it at the “eleventh hour” is, in and of itself, an arousal-related experience (Ferrari, 1992).

Identification of Arousal-Based Procrastination

The concept of arousal procrastination has received a moderate amount of research attention; however only one study has provided any direct evidence for this motivation for procrastination. In Ferrari’s 1992 study, an examination of the construct and discriminant validity of two procrastination measures, namely the General Procrastination scale (GP; Lay, 1986) and the Adult Inventory for Procrastination (AIP; McCown & Johnson, 1989; as cited in Ferrari, 1992), was undertaken. Ferrari was interested in the ability of both procrastination measures to account for procrastinatory behaviour in two distinct samples of participants. To accomplish this Ferrari gave participants a questionnaire package containing both of the procrastination inventories,

the Sensation Seeking Scale Form – V (SSS-V; Zuckerman, Eysenck, & Eysenck, 1978), the Need for Cognition Scale (Cacioppo & Petty, 1982) and Rosenberg's (1979) Self-Esteem Scale.

The results of this study demonstrated that both procrastination inventories (i.e., the GP and AIP) were significantly related to task delay, but not significantly related to each other. How could this be? How could two inventories accounting for the same behaviour not be related to one another? Given that the procrastination inventories were correlated but were still able to account for procrastinatory behaviour, Ferrari (1992) concluded they must assess different motives for procrastination. In order to further understand this finding, Ferrari examined the correlations between the procrastination inventories and the other administered scales. Once these statistics were computed, a supplementary factor analysis was conducted.

Ferrari (1992) examined the correlations between scores on the procrastination measures with the total scores of the SSS-V, the Need for Cognition Scale, and the Self-Esteem Scale. He found that scores on the GP inventory were positively correlated to only the sensation seeking items ($r = .23, p < .001$) while the AIP scores were negatively correlated to both the scores on need for cognitions ($r = -.31, p < .001$) and self-esteem ($r = -.28, p < .001$) scales, but not related to sensation seeking. In the subsequent factor analysis, two principal factors accounting for 43.6% of the variance were identified. In accordance with the previously calculated correlations, it was demonstrated that GP scores loaded with the sensation seeking subscales while AIP scores loaded negatively on the need for cognition and self-esteem scales. These findings led Ferrari (1992) to conclude that the procrastination inventories assess different motives for task-delaying

behaviours: the GP measuring procrastination motivated by a need for arousal, and the AIP scale assessing procrastination motivated by avoidance behaviour. Essentially, by identifying the factor structure of each procrastination inventory, Ferrari concluded that these factors must represent different motivations of procrastinators.

Based on the preceding review of arousal-based theories of personality and taking into account Ferrari's (1992) research on the underlying structure of two procrastination inventories, it seems reasonable that there may be such a thing as an arousal procrastinator. However, a different approach must be taken in order to more clearly identify a potential subgroup of individuals who procrastinate for arousal related reasons. A model for this type of analysis, where subgroups of participants are identified based on their self-attributions for procrastination was conducted by Schouwenburg (1992). Schouwenburg's 1992 paper investigated fear of failure and its effect on task delay.

Procrastination and fear of failure: A model for exploring underlying motivations for procrastination. Even though one might tacitly assume that fear of failure or the anxiety associated with a negative appraisal (i.e., receiving a poor grade on an test) may lead to procrastination, a very recent meta-analysis of procrastination attributes this construct's relation to task delay as being completely mediated by other variables (Steel, 2007). Taking this meta-analytic finding into consideration makes Schouwenburg's (1992) study of fear of failure and procrastination all the more important, mainly because through his unique research design he was able to demonstrate that for a specific subgroup of procrastinators, fear of failure was identified as an important part of the participants' beliefs about their procrastination.

In his study investigating the relationship between fear of failure and procrastination, Schouwenburg (1992) demonstrated that for a minority of participants, fear of failure was identified as a reason for their procrastinatory behaviour. This study is of particular interest to the proposed study of arousal procrastination mainly because of the methods used in identifying the subset of participants who self-attributed fear of failure as a potential causal factor for their procrastinatory behaviour. Also, Schouwenburg (1992) provides some preliminary evidence for arousal procrastination.

Schouwenburg (1992) explored the relationship between fear of failure and procrastination by administering a questionnaire package that included both a trait and behavioural measure of procrastination, a checklist containing a variety of reasons for procrastination called the Procrastination Assessment Scale-Students (PASS; Solomon & Rothblum, 1984), and a fear of failure scale measuring trait fear of failure. Briefly, the distinction between the trait measure and the behavioural measure of procrastination is that the trait measure assesses how participants' would usually respond to the situations outlined in the questionnaire items, whereas the behavioural measure of procrastination measured how frequently the participants self-reported that they had *actually* engaged in various procrastinatory behaviours over a specified amount of time.

Once Schouwenburg (1992) had collected his data, the sample was divided into two groups through the use of a median split on the Procrastination Checklist Study Tasks (PCS; Schouwenburg, 1995). The PCS is a measure of self reported behavioural procrastination which assesses academic task delay occurring over the past academic term. The resulting two groups, one characterized by high scores on the PCS (high-PCS) and the other characterized by low scores on the PCS (low-PCS), were further subdivided

into smaller, mutually exclusive, homogeneous subgroups through a cluster analysis which took into account responses to the PASS checklist (the scale assessing various reasons for procrastination). For example, four participants, enlisting similar reasons for their procrastination formed one group due to their common scores on the PCS (i.e., their high levels of trait procrastination and their increased level of trait fear of failure). In the end, the high-PCS group was divided into six homogeneous sub-groups, while the low-PCS group was divided into five homogeneous sub-groups. Schouwenburg (1992) observes that given the great number of mutually exclusive homogeneous subgroups of procrastinators, it is clear that when participants are offered the opportunity to endorse a variety of potential reasons for their procrastinatory behaviour, they do so.

Schouwenburg (1992), citing participants' self-attributed reasons for procrastination, states that overall these participants can be generally characterized as rebellious, test-anxious and task-aversive. He also notes that risk-taking/extraversion appears to be a common characteristic of both procrastinators and non-procrastinators in this sample, with 70% of the participants reaching the threshold. Upon closer examination of the PASS scale however, it is noticed that there are only a few items assessing the risk-taking/extraversion construct; this realization may help account for the seemingly inflated percentage.

In addition to subdividing his sample into smaller, homogeneous groups of procrastinators, Schouwenburg (1992) also performed a factor analysis on the PASS in order to identify the underlying factors of the scale that were associated with the participants' self-attributions of procrastination. Six factors accounting for 58% of the total variance were identified on the PASS scale. These factors, listed according to the

proportion of variance they accounted for, were Fear of failure (26%), Lack of assertion, (8%), Task aversion (8%), Dependency or conformism (6%), Risk-taking/extraversion (4%), and Rebelliousness (4%). These factors or self-attributions were then assessed in order to gauge their relation to procrastinatory behaviour.

Ultimately, Schouwenburg (1992) was concerned with fear of failure's relation to procrastination. To this end, structural equation modeling was utilized for different subgroups of the overall sample. When analyzing the entire sample, it was noticed that both trait fear of failure and trait procrastination were only marginally correlated ($r = 0.14, p = .016$). This result held true for most of the various subgroups with the exception of one at the high-PCS level. Therefore, it can be concluded that in general, fear of failure and procrastination as traits are unrelated. Most importantly, however, Schouwenburg was clearly able to demonstrate that for a certain subgroup of individuals who scored highly on both the trait measure of fear of failure and the behavioural measure of procrastination, fear of failure was a significant factor in their procrastinatory behaviour.

The methods used by Schouwenburg in identifying this subgroup of procrastinators is influential to the present study since it is expected that similar results will be found in relation to the arousal-based personality traits and procrastination. In the present study, it is expected that a subgroup of procrastinators, characterized by a strong endorsement of the arousal-related reasons as a potential cause for their procrastination, will collectively have higher scores on the arousal-based personality traits, in comparison to individuals who do not endorse these arousal-related reasons for their procrastination as strongly.

Rationale for the Current Study

The preceding review of the arousal-based theories of personality, together with the examination of Ferrari (1992) and Schouwenburg's (1992) research, provides the conceptual framework and preliminary evidence for the "arousal procrastinator." Collectively, the arousal-based theories of personality have demonstrated that some individuals display a greater tendency to seek more stimulating behaviour in order to boost their level of arousal to a more preferable or "optimal" state. For example, extraversion was shown to be a contributing factor in the engagement of stimulating behaviour, as was demonstrated by Geen (1984) and his research addressing noise sensitivity, preferable level of stimulation, and the advantageous effects of the optimal level of arousal on performance. This finding that performance on a given task improves when an individual is stimulated to his or her optimal level relates well to the concept of arousal procrastination. For instance, if an individual delays the completion of a monotonous task in order to complete it closer to the deadline, it could be argued that this type of procrastination is purposeful and is aimed at increasing arousal with the expectation that this boost will improve performance.

Even though delaying a task until the last minute may seem irrational given the negative effects associated with this type of delay (e.g., Milgram, 1991; Steel, 2007), Larsen and Zarate (1991) provide strong evidence demonstrating that for some individuals (i.e., reducers), being under-aroused is more aversive than the corresponding negative effects associated with working against a deadline. Larsen and Zarate identify this relationship well by demonstrating that reducers readily volunteer to engage in experimental manipulations that are anticipated to both increase arousal and induce

negative affect. These research results provide further support for the conception of the arousal procrastinator by demonstrating that it is possible for an individual to engage in irrational behaviour that may result in negative consequences (i.e., procrastinating) in the anticipation of receiving arousal-related rewards.

Finally, much like reducers and extraverts, sensation seekers have also been demonstrated to frequently engage in stimulating behaviour. In fact, sensation seekers have been characterized as individuals who function best when they are optimally aroused; as a result, they behave in ways aimed at maintaining a high level of stimulation (Stelmack, 2004).

Given this theoretical base, it is surprising that procrastination motivated by arousal-related incentives, has not received a greater amount of research attention. Furthermore, the only study that has indicated that this relationship may exist did so by examining the factor structure of a procrastination inventory (e.g., Ferrari, 1992) and not by actually identifying a group of individuals who self-report that they believe they are motivated to procrastinate by arousal-related reasons. Therefore, adopting methods inspired by Schouwenburg's (1992) analysis of fear of failure and procrastination, my research aims to clarify whether or not: 1) the arousal-based personality traits are significantly related to procrastinatory behaviour and 2) whether or not the reasons given by participants as to why they believe they procrastinated are in fact related to their arousal-based personality traits.

Method

Participants

Participants for the present study were obtained from the research-participant pool of introductory psychology students enrolled at Carleton University. A total of 311 individuals participated in this study, 187 of which were females (60.1%) and 124 were (39.9%) males. The mean age of these participants was 20.09 ($SD = 3.08$) and the modal age was 18. Participants were primarily Caucasian (63.3%; 8% Asian, 6.1% Middle Eastern, 3.2% African American, and 9.3% Other). The remaining ten percent of participants ($n = 31$) declined to disclose their race/ethnicity.

Measures

The on-line questionnaires included: a demographic questionnaire (Appendix A), the General Procrastination Scale (Appendix B), the Eysenck Personality Questionnaire-Revised (Appendix C), the Sensation Seeking Scale-V (Appendix D), the Form G2 Reducer Index (Appendix E), the Procrastination Assessment Scale-Students (Appendix F), and the Procrastination Checklist Study Tasks (Appendix G).

Demographic Questionnaire. Participants completed a brief demographic questionnaire to ascertain their age, ethnicity, gender, and year of study. These data were used to describe the sample.

General Procrastination Scale (GP; Lay, 1986). The General Procrastination Scale is a measure of trait procrastination. The GP includes 20 items, 10 true-keyed items and 10 false-keyed items. All of the items contained within the GP are rated on a five-point Likert scale, where low values indicate statements that are uncharacteristic of the participant and higher values (e.g., 5) indicate statements that are highly characteristic

of that participant. True-keyed items relate to procrastination and include such questions as, "I generally delay before starting on work I have to do", whereas false-keyed items relate to a lack of procrastination and include items such as, "I generally return phone calls promptly" (Lay, 1986). Accordingly, individuals with scores ranging from greater than three to a maximum of five have engaged in some form of procrastination in the past. The GP was found to be quite reliable with an alpha value of .83 (Lay, 1986). Furthermore, validity was established through a series of studies. For example, it was positively correlated to disorganization in everyday activities and to the failure of remembering to complete a menial task in the future (Lay, 1986). This scale has been used in many procrastination studies since its development (e.g., Ferrari, 1992; Ferrari, 1993; Ferrari & Tice, 2000; Schouwenburg, 1992). The alpha reliability of the total score for this scale in the present sample was .823.

Eysenck Personality Questionnaire-Revised (EPQ-R; Eysenck, Eysenck & Barrett, 1984). This is a 48-item instrument measuring three dimensions of personality: psychoticism, extraversion, and neuroticism. For the purposes of the present study only the extraversion dimension was used. Items on the EPQ-R are responded to by using a *yes* or *no* response mechanism. Some of the questions tapping into the extraversion dimension on the EPQ-R are: "Do you enjoy meeting new people?", "Do you usually take the initiative in making new friends?" and "Are you rather lively?" In Eysenck, Eysenck, and Barrett's (1984) reliability analysis of the EPQ-R, the extraversion subscales demonstrated high reliability in both a male ($\alpha = .88$) and female ($\alpha = .84$) sample. In the present study the alpha reliability for the extraversion subscale was .832.

Sensation Seeking Scale-V (SSS-V; Zuckerman, Eysenck, & Eysenck, 1978). The

SSS-V is a 40-item measure of trait sensation seeking developed to quantify individual differences in optimal levels of stimulation and arousal (Zuckerman, 1994). The SSS-V is comprised of four subscales, each containing 10-items that measure distinct facets of sensation seeking. The four subscales are: 1) thrill and adventure seeking (TAS), 2) experience seeking (ES), 3) disinhibition (Dis), and 4) boredom susceptibility (BS). Scores can be calculated for each subscale or cumulatively in the form of a total score. Sample items are: "I often wish I could be a mountain climber" (TAS), "I like to explore a strange city or section of town by myself, even if it means getting lost" (ES), "I like wild uninhibited parties" (Dis), and "I can't stand watching a movie I've seen before" (BS). Zuckerman (1994) reports the internal and retest reliabilities for each subscale in a sample of American males. The internal consistencies for the various subscales were: TAS, $\alpha = .77$; ES, $\alpha = .61$; Dis, $\alpha = .76$; BS, $\alpha = .56$. The internal consistency for the total score in Zuckerman's sample was, $\alpha = .85$. This scale has also demonstrated acceptable validity as high sensation seeking scores are associated with participation in risky activities (e.g., Zuckerman & Kuhlman, 2000). In the present study the alpha reliability of the SSS-V total score was .80.

Form G2 Reducer Index (Form 2; Herzog, Williams, & Weintraub, 1985). This measure consists of 45 declarative statements relating to topics salient to reducers/augmenters. Participants rate to what extent they agree with each statement by using a six-point scale ranging from 1 (*strongly disagree*) to 6 (*strongly agree*). Some sample items include: "I crave excitement," "I would like a job that required a lot of traveling," "I tend to be shy and withdrawn (reversed)," and "I am bothered by bright lights (reversed)" (Herzog, Williams, & Weintraub, 1985). Herzog and colleagues

(1985) found that the Form G2 had a split-half reliability estimate of .61. Helping further support the validity of this scale, it was demonstrated that the total score on the Form G2 reducer index was significantly related to the kinaesthetic figural aftereffect, a behavioural measure of the reducing/augmenting dimension (Herzog et al., 1985). In the present study the internal reliability of the total score of the Form G2 scale was .69.

Procrastination Assessment Scale-Students (PASS; Solomon & Rothblum, 1994).

The PASS is a 44-item scale designed to measure both the prevalence and reasons for academic procrastination. The PASS is divided into two separate sections with the first section assessing the prevalence of various forms of procrastination, the extent that these forms of procrastination are bothersome, and the extent to which an individual would like to reduce this type of procrastination. The second section of the PASS scale lists a variety of potential reasons of why individuals may procrastinate. Some reasons for procrastination listed in this section are: “You had too many other things to do,” “You worried you would get a bad grade,” “You liked the challenge of waiting until the deadline,” and “You looked forward to doing this task at the last minute” (Solomon & Rothblum, 1994). Participants rate to what extent they agree with each statement by endorsing one of five letters ranging from “a” (*not at all reflects why I procrastinate*) to “e” (*definitely reflects why I procrastinate*). The reasons for procrastination section of the PASS was slightly modified to increase the number of items pertaining to arousal-related reasons for procrastination. This modification was necessary due to the factor structure of the scale. Recall that Schouwenburg (1992) performed a factor analysis on the PASS and found that there were six factors underlying the scale, accounting for 58% of the variance. One of these factors was Risk-taking/extraversion, however it only

accounted for a small proportion of the variance (4%), due to the fact that it was only represented by a small number of items. Therefore, it becomes clear that additional items relating to arousal-based reasons for procrastination needed to be included in order to ensure that participants had an adequate opportunity to endorse these types of items as applicable.

The act frequency approach was taken in order to identify these additional, arousal-related, procrastinatory items. Act frequency assumes that all categories, for example “arousal-related procrastination,” are subsumed by specific *acts* or sub-categories (Buss & Craik, 1983). For example, the category of arousal-related procrastination is likely subsumed by acts such as: “I enjoy completing tasks at the last minute because of the physiological rush I receive” or “I work best under pressure.” In order to identify potential acts or behaviours associated with arousal procrastination, three graduate students in psychology (the author included) engaged in a brainstorming session aimed at nominating potential acts and then identifying which of the acts seemed the most prototypical of arousal procrastination. Four acts were identified through this process.

Ferrari (1989) conducted reliability tests on the PASS scale using split-half comparisons. For the frequency of procrastination, taken from first section of the PASS, the split-half coefficient was .26. On the second section of the PASS scale (i.e., the reasons for procrastination) the split-half correlation reported by Ferrari (1989) was .81. In the present study, the alpha reliability for the frequency of procrastination, as measured on the first section of the PASS scale, was .73. In addition, the alpha reliability estimate for the reasons for procrastination in the present study was .84. The PASS scale

has also demonstrated acceptable validity. For example, many self-attributions for procrastination have been related to self-reported procrastinatory behaviour (e.g., Schouwenburg, 1992).

Procrastination Study Tasks (PCS; Schouwenburg, 1995). The PCS is a measure of behavioural procrastination (Schouwenburg, 1995) and assesses academic procrastination across three school-related areas: 1) administrative tasks (e.g., registering for classes), 2) attending lectures, and 3) studying for exams. The scale describes a school-related behaviour, like studying for an exam, and then asks participants more specific questions related to that task. The main goal of the PCS is to compare the differences between when tasks are intended to be completed and the point in time when they actually are completed; therefore each question is scored twice (once for the actual completion and once for the intended completion). For example, the PCS inquires about when students intended to, and actually began “rehearsing materials” for their previous exams, offering the following response options; *after first lectures, amply in time, just in time, or too late* (Schouwenburg, 1995). The total PCS score is the sum of all of the difference scores across the three subscales. The internal consistency of the total score, as reported by Schouwenburg (1992) was .72. In the present study, the alpha reliability for the total PCS score was identical to what Schouwenburg originally reported (.72).

Procedure

Participants voluntarily signed-up for this experiment via the Carleton University Psychology Experiment Sign-Up System (SONA), where an advertisement for the study was posted. This advertisement outlined the basic objectives of the study and included an estimation of the time it would take participants to complete the various questionnaires.

This advertisement also informed participants that they would be granted a bonus half-credit in their introductory psychology class for their participation.

The study was administered online through SONA. Once the participants gave their informed consent, the questionnaires were immediately available for them to complete. The directions given to participants on how to appropriately fill out the various questionnaires were limited to the introductory guidelines provided at the beginning of each questionnaire. Since this study was administered online the principal researcher was not available to clarify any problems or questions participants may have had. However, these scales have all been used in past research, are fairly self-explanatory, and participants in previous studies in our research group have not reported difficulties with the completion of these measures.

Upon completing the various questionnaires, a debriefing form was displayed on the computer screen disclosing the purpose of the research and providing names, phone numbers and email addresses of individuals who could be contacted for further information regarding the study. In addition, contact information for Carleton University's academic success centre was provided for interested individuals. Finally, after the participants were finished reading or printing out their debriefing form, SONA automatically granted them their bonus credits.

Results

Data Cleaning Procedures

Initially, these data were screened for any missing information to ensure that the greatest number of participants were appropriately included in each statistical analysis. The only scale that was noted to have a significant amount of missing information was the SSS-V. This situation was remedied in the following manner: If a participant had more than three items missing from their SSS-V responses, their total score was not calculated; however, if participants had three or less missing items, their total SSS-V score was calculated with the missing items excluded. This procedure provided a good middle point in helping retain participants while not allowing the missing information to bias total SSS-V scores excessively. Mean scores were not used to replace missing information as the SSS-V is a dichotomous measure. In the end, 20 participants had too much missing information to calculate their total SSS-V scores and 43 participants had scores calculated with up to three missing items.

After the search for missing data, potential outliers were examined within the various total score distributions (e.g., total GP scores, total SSS-V scores, etc.). Outliers were explored statistically and graphically. Extreme scores were noted in many of the various total score distributions; however, only one of these scores was identified as an outlier. In the distribution of total GP scores, one participant had a score that was separated by -3.69 standard deviations from the mean. Upon visual inspection, it was confirmed that this score was significantly disconnected from the other scores. Therefore, this score was modified to lessen its potential influence on the analyses. The score was changed so that it was still the lowest datum point in the distribution by finding

the next lowest score, subtracting that number by one, and assigning this new value to replace the outlier (Tabachnick & Fidell, 2007).

Examining the Association between the GP Scale and the SSS-V

In an effort to evaluate Ferrari's (1992) assertion that the General Procrastination Scale (GP) is a measure of arousal procrastination, correlations between the GP scale and the Sensation Seeking Scale (SSS-V) were examined. As shown in Table 1, total scores on both of these measures were not significantly correlated ($r = .09, p = .12$).

Table 1.

Correlations between Arousal-based Traits and Procrastination Scales

	GP	PASS	PCS
Sensation Seeking	.09 (286)	.11 (285)	.06 (281)
Reduction	.04 (282)	.01 (280)	.02 (278)
Extraversion	-.07 (298)	-.02 (290)	-.02 (288)

Note. Values enclosed in parentheses represent the number of participants.

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

To further investigate the relationship between the GP and SSS-V scales, an exploratory factor analysis, replicating Ferrari's study (1992), was conducted. This analysis examined all GP and SSS-V items in an attempt to uncover the associations between the measured variables. An oblique (promax) rotation was utilized allowing for correlations among the factors. The initial factor analysis produced 20 factors with eigenvalues above one; however, upon examination of the scree plot, it became clear that after the sixth factor there was a noticeable decrease in the magnitude of the eigenvalues and a corresponding decrease in the percentage of variance accounted for by the factor

solution. Therefore, a six-factor solution was determined to be most appropriate. The six-factor solution accounted for approximately 33% of the variance among the measured variables. Most importantly, the rotated factor solution revealed that all of the GP items loaded *exclusively* on the first and fifth factors, while all of the SSS-V items loaded *exclusively* on the second, third, fourth, and sixth factors, further indicating a lack of association between GP and SSS-V items (see Appendix H).

Arousal-Based Measures of Personality and Procrastination

Given the null correlation between sensation seeking and trait procrastination (i.e., the GP scale), the other measures of arousal-based personality (i.e., reducing/augmenting and extraversion) were correlated with the measures of procrastination in an effort to find any significant relationships. Again, as can be seen in Table 1 the correlations of extraversion and the reducer index with the GP scale, the PASS scale and the PCS scale are all statistically insignificant.

Reasons for Procrastination and Identifying the Arousal Procrastinator

A principal component analysis (PCA) of the second section of the PASS scale was completed in order to reduce the scale items into components that reflected the broad reasons for procrastination being measured (see Appendix I). In addition, this PCA was also used to allow for the computation of component scores. The PCA resulted in the extraction of five components with eigenvalues greater than one. A five-component structure was maintained after careful analysis of the scree plot of eigenvalues, and the percentage of variance accounted for by the components. This five-component structure accounted for approximately 53% of the variance on the second section of the PASS scale (i.e., the reasons for procrastination section). The five components obtained and the

corresponding percentages of variance they accounted for were labeled as: 1) Fear of Failure (24.55%), 2) Lack of Self-Efficacy (10.63%), 3) Task Aversion (7.48%), 4) Risk-Taking/Arousal (5.53%), and 5) Overload (4.7%). Of importance to the present investigation was the component of Risk-Taking/Arousal.¹

Average weighted component scores on the Risk-Taking/Arousal component were calculated for each participant by summing the weighted scores for each item loading on the Risk-Taking/Arousal factor and then dividing it by the number of items that loaded on the component. This component score was essential for identifying participants who more strongly endorsed arousal-related beliefs as one of the causes for their procrastination.

Using a median-split on the Risk-Taking/Arousal component scores, a “high” and “low” group of participants were identified. A multivariate analysis of variance (MANOVA) was conducted on these groups in order to determine if there were any significant differences between the high and low groups on any of the arousal-related measures of personality (e.g., sensation seeking, the reducer index, extraversion) or on the measures of procrastination (i.e., the GP, PASS, and PCS).

Before this MANOVA was executed, all of the statistical assumptions associated with analysis of variance were explored. All of the variables entered into the MANOVA were normally distributed with the exception of total extraversion scores. The extraversion distribution was substantially negatively skewed. In light of this finding, the distribution first needed to be reflected and then transformed (Tabachnick & Fidell,

¹ Due to experimenter error, seven items were unintentionally omitted from the second section of the PASS. It is believed that none of these items affected the extraction of the of the Risk-Taking/Arousal component.

2007). Once the distribution was reflected, changing the skew from negative to positive, it was transformed using a square root transformation. After these procedures were complete, the extraversion distribution no longer violated the normality assumption as the standardized skewness value was within the appropriate range. Finally, the homogeneity of variance assumption was maintained for all variables, as the F_{\max} ratios between the two groups were all well below the cutoff score of 10.

The multivariate analysis of variance test was significant, indicating that overall there were differences between the high and low Risk-Taking/Arousal groups on the various measures of arousal-based personality and procrastination $F(6, 251) = 4.71, p < .001$, partial $\eta^2 = .10$. In addition, upon examination of the between-subjects effects (see Table 2), significant differences were noted on the scores for SSS-V, the reducer index, extraversion and the GP scale.

Table 2.

Differences between Groups (Low vs. High) on Arousal-based Traits and Procrastination

Source	<i>df</i>	<i>F</i>	η^2	<i>p</i>
Between subjects				
SSS-V	1	4.40*	.02	.04
Reducer Index	1	10.90**	.04	.001
Extraversion	1	12.50**	.05	.001
GP	1	4.35*	.02	.04
PASS	1	3.00	.01	.08
PCS	1	0.70	.00	.42
<i>S</i> within-group error	256			

Note. η^2 = partial eta squared

S = subjects.

* $p < .05$. ** $p \leq .001$.

In order to more accurately assess the magnitude of these differences, Table 3 includes the various group means. As can be seen, the magnitude of the differences between the group means of the SSS-V, the Reducer Index, Extraversion, and the GP scale, while statistically significant, are not very large.

Prediction of Endorsing Arousal-Based Beliefs as the Reasons for Procrastination

Finally, an alternative approach was taken to the data using continuous scores as opposed to the high and low groupings. A regression analysis was conducted in order to determine to what extent all of the arousal-based personality characteristics combined, were able to predict the Risk-Taking/Arousal beliefs of procrastination. A positive linear relationship was evident between the arousal-based measures of personality and the Risk-Taking/Arousal component scores ($r = .23$). In addition, the regression model was also statistically significant [$F(3, 266) = 4.83, p = .003$]; all three of the arousal-based predictor variables accounted for approximately 5% of the variance in why participants endorsed the Risk-Taking/Arousal beliefs as one of the reasons for their procrastination (see Table 4).

Table 3.

Group Means on Dependant Variables

		Mean	SD	n
SSS-V	Low	19.1	6.50	130
	High	20.8	6.00	128
Reduction	Low	159.2	16.70	130
	High	166.3	17.90	128
Extraversion	Low	2.20	0.80	130
	High	1.90	0.70	128
GP	Low	63.8	11.80	130
	High	66.6	9.80	128
PASS	Low	19.2	4.20	130
	High	20.0	3.90	128
PCS	Low	6.30	4.00	130
	High	5.80	4.50	128

Table 4.

Summary of Simultaneous Regression Analysis for Variables Predicting Factor Scores on the Risk-Taking/Arousal Factor (N = 269)

Variable	B	SE B	β
Sensation Seeking	.004	.008	.036
Extraversion ^a	-.075	.056	-.092
Reducer	.005	.003	.142

Note. None of the Standardized Betas (β) were significant.

^aExtraversion is a transformed and reflected variable.

$R^2 = 5.2$.

Discussion

The overall purpose of this study was to explore the seemingly contentious notion of arousal procrastination. This idea is controversial mainly because arousal procrastination seems counterintuitive. Why would anyone intentionally delay the completion of a task when previous research has demonstrated that these delays evoke

negative emotions like shame and guilt (e.g., Bennett, Pychyl, & Wohl, 2008; Fee & Tangney, 2000; Stainton, Lay, & Flett, 2000)? It would seem that any arousal associated with procrastination would be quite negative. In addition to being counterintuitive, arousal procrastination is also contentious because the findings of this study indicate that there is no empirical evidence supporting the existence of a specific measure of arousal procrastination, an idea that has been promulgated for some time. Recall, that in Ferrari's 1992 paper, he found that the General Procrastination Scale (GP) was correlated with, and loaded on the same factors as the Sensation Seeking Scale (SSS-V). Given these findings, Ferrari concluded that the GP must measure a form of procrastination motivated by arousal-related rewards. In the present study, this finding was not supported. Overall, total GP scores were not correlated with total SSS-V scores, and the factor structures of these measures were clearly segregated; the GP items loaded on two factors separate from the four SSS-V factors. These findings clearly call into question the notion of arousal procrastination, especially considering that Ferrari's initial argument for this type of procrastination was predicated on the fact that the GP and SSS-V scales were related to one another.

Although the GP and SSS-V scales were not related in the present study, other avenues for identifying arousal procrastinators were explored. One straightforward approach employed to identify whether or not individuals might procrastinate for arousal-related reasons was to correlate scores on individual measures of arousal-based personality traits (e.g., sensation seeking, extraversion, the reducer index) with measures of procrastination. As presented in the results, these correlations were all insignificant, demonstrating that scoring highly on any of the arousal-based personality dimensions

does not indicate an increased propensity to procrastinate. This finding raised further doubt about the possibility of an arousal procrastinator.

The final approach taken in the present study to find evidence for arousal procrastination was to identify a subgroup of participants who actually endorsed arousal-related reasons for their procrastination. The key question here was whether attributing procrastination to arousal-related reasons was related to elevated scores on arousal-based measures of personality? To this end, a principle component analysis was conducted on the reasons for procrastination subsection of the PASS scale. This analysis, which was used to categorize the reasons for procrastination under common themes, produced five distinct components, including a component that tapped into arousal procrastination (i.e., Risk-Taking/Arousal). Using a median split on the component scores for the Risk-Taking/Arousal reasons for procrastination, the results indicated that individuals who strongly believed that the Risk-Taking/Arousal component was a main reason for their procrastination had higher trait procrastination scores and scored higher on the individual measures of arousal-based personality, when compared to the individuals who did not strongly endorse these reasons for their procrastination. However, the mean differences between these two groups were very small, prohibiting any definitive conclusions regarding arousal procrastination.

Given these small mean differences, a regression analysis was also performed in order to determine if the arousal-based measures of personality could account for any of the variance in why people believed that the Risk-Taking/Arousal reasons might be the cause for their procrastination. The regression revealed that the three measures of arousal-based personality (i.e., sensation seeking, extraversion, and the reducer index)

accounted for approximately 5% of the variance in why people chose to endorse the Risk-Taking/Arousal reasons for their procrastination. Again, evidence for an arousal-procrastinator was not strong.

Given the relatively large and growing literature based on the notion of arousal procrastination as measured by the General Procrastination Scale, it is important to discuss the findings of this study in relation to what research has revealed about arousal-based personality traits and procrastination, as well as the research literature on procrastination more generally. To do this, I turn to a discussion of three main issues. First, I discuss in more detail why the GP scale is claimed to be a measure of arousal-based procrastination. In this section, I conclude that the GP scale is not a measure of arousal procrastination and that many of the assumptions previously used to support this proposition are questionable. Second, I discuss the arousal-based personality traits and their relation to procrastination overall. Here I examine past research linking the arousal-based personality traits, especially extraversion, to procrastination. This discussion focuses on how the results of the present study correspond with the existing literature, while also attempting to account for any variations. Finally, I attempt to make sense of why some individuals might believe they procrastinate for arousal-related reasons when, in fact, their arousal-based personality traits are only weakly able to predict these beliefs. I conclude that these procrastinatory beliefs may be better understood through an examination of cognitive dissonance in relation to procrastination and the attributions of psychological causes for this delay.

Questioning the Claim of an Existing Measure of Arousal Procrastination

The initial findings of the present study cast doubt on the claim that the GP scale is a measure of arousal procrastination, suggesting that the assumptions previously made about this scale need to be re-examined. The methods originally used by Ferrari (1992) to identify arousal procrastination were replicated in this study and the results did not correspond; this discrepancy suggests that the GP scale is not a measure of arousal-based procrastination.

Ferrari (1992) originally reasoned that the GP scale might measure arousal procrastination by observing that this scale was not significantly related to another measure of procrastination, the Adult Inventory for Procrastination (AIP), within the same sample of participants. Ferrari noted that both procrastination measures were equally correlated with measures of procrastinatory behaviour; however, within the same sample of participants these scales were unrelated to each other. Based on this finding, Ferrari (1992) concluded "... that the GP and AIP inventory assess different constructs" (p. 106). Ferrari refined this conclusion by explaining that the scales likely measured different motives for procrastination.

In order to determine what motives for procrastination these scales might be measuring, Ferrari (1992) correlated and factor analyzed each procrastination measure along with the SSS-V scale and other individual difference inventories. As previously explained, Ferrari found that scores on the GP scale correlated with scores on the SSS-V scale, and that items from the GP scale loaded on the same factors as the items from the SSS-V. This led Ferrari to conclude that the GP scale must be a measure of procrastination motivated by a need for arousal.

The finding that the GP and AIP scales were unrelated in Ferrari's 1992 study is quite surprising given that recent research conducted in this area, including Ferrari's most recent research, has found these scales to be highly correlated. For example, a study examining the cross-cultural differences in procrastination (Ferrari et al., 2007), found that the GP and AIP scale scores were highly correlated across the entire sample ($r = .72$, $p < .001$). In addition, Ferrari and colleagues state that the two typologies of procrastinators (i.e., arousal and avoidant) are typically correlated in the range of .65 to .75. Having both procrastination inventories correlate so highly causes some theoretical problems for the authors, considering that initially both of these inventories were considered to be unrelated, tapping distinct motives for procrastination. The study by Ferrari and associates (2007), among others (e.g., Ferrari & Diaz-Morales, 2007; Ferrari, O'Callaghan, & Newbegin, 2005), indicates that these two scales are clearly correlated, as might be expected when comparing two scales that measure the same underlying construct: procrastination.

Given that these scales are so highly correlated in recent research, it does not seem plausible to assume that they are measuring two distinct motives for procrastination. Furthermore, even if these inventories were measuring two distinct motives for procrastination, correlations of this magnitude would not be expected. To further support the notion that these scales are likely measuring the same underlying construct, the factor analysis conducted on these two scales in the present study clearly demonstrates that the GP scale items load on completely separate factors from the SSS-V items.

In order to account for the high correlations between these scales in their most recent research however, statistical methods attempting to separate the shared covariance between both types of procrastinators were adopted by Ferrari and colleagues (2007). This procedure has been used, they explain, in order to identify *pure* arousal and avoidant procrastination scores. The statistical approach chosen by the authors was to regress both GP scores on AIP scores, and AIP scores on GP scores, arriving at residual variances separating the effects of one scale from the other.

Although in a practical sense this statistical procedure is not overtly problematic, it becomes so when the authors attempt to attribute what these residuals variances, or *pure* scores, are actually measuring. Based on past research, Ferrari and Diaz-Morales (2007) assume that the GP residual variance, after having removed the effects of the AIP scale, must be measuring arousal procrastination. The results of my study however, show that this assumption is likely inaccurate, considering that the GP and SSS-V scales are neither correlated nor load onto the same factors. The residual variance that Ferrari and Diaz-Morales find on the GP scale might indeed be *pure*, but it is not accurate to label this residual variance as a measure of pure “arousal procrastination.”

In summary, the findings that total GP scale scores do not correlate with and the individual items to not load on the same factors as the SSS-V in the present study, casts a substantial amount of doubt on the notion that the GP scale is a measure of arousal procrastination. Moreover, this finding calls into question current research that classifies the residual variance of the GP scale, after having removed the influence of the AIP scale, as a measure of pure arousal procrastination.

Arousal-Based Personality and Procrastination

The finding that overall, none of the arousal-based personality traits were correlated with either trait or behavioural measures of procrastination is surprising, especially when considering that past research does demonstrate a weak relationship between extraversion and procrastination. In his recent meta-analysis, Steel (2007) reviewed the relation of extraversion, along with its underlying facets (e.g., positive affect, impulsiveness, sensation seeking, and boredom proneness) with procrastination, finding that on average, extraversion was weakly negatively correlated with procrastination, $r = -.12$, 95% CI $-.15, -.09$ ($k = 27$). Steel notes however, that some of extraversion's facets have been shown to be related with procrastination more strongly. For example, impulsiveness was shown to play a key role in procrastinatory behaviour, with an average correlation of $.41$, 95% CI $.37, .46$ ($k = 22$). In Steel's meta-analysis, even sensation seeking is shown to have a weak relationship with procrastination, with an average correlation of $.17$, 95% CI $.09, .25$ ($k = 11$). However, Steel clearly notes that sensation seeking is only of marginal importance when attempting to account for procrastinatory behaviour and that past research has found that only a small number of participants respond positively to the procrastinatory reason of "looked forward to the excitement of doing things at the last minute" (p. 78).

Watson (2001) found similar results when correlating procrastination, as measured by the PASS scale, with extraversion, as measured by the NEO Personality Inventory (NEO-PI). Extraversion was shown to be negatively correlated with procrastination ($r = -0.21$), similar to Steel's (2007) meta-analytic findings. There is a fair amount of evidence supporting this weak, negative relationship between extraversion and procrastination. For example, Schouwenburg and Lay (1995) examined the

relationship between the Big Five personality traits (as measured by the NEO-PI) and procrastination (as measured by the GP scale). Again, it was found that there were weak negative links between extraversion and procrastination. Specifically, extraversion was correlated with procrastination at a level of $-.14$ in this study (Schouwenburg & Lay, 1995). Finally, in a meta-analysis conducted by Van Eerde (2004) it was also found that overall, extraversion was slightly negatively related with procrastination ($r = -.08$, 95% CI $-.12, -.04$). However, Van Eerde notes that there is a considerable amount of variation among the seven extraversion effect sizes included in her meta-analysis. For example, one effect size indicated a sizable positive relationship between extraversion and procrastination ($r = .63$) while the others indicated weak negative relationships. She reports that the differences between the most extreme positive and negative effect sizes were significantly different from each other ($\chi^2 = 160.96, p < .001$), implying that the relationship between extraversion and procrastination was inconsistent in her review.

In sum, it is clear that extraversion has a weak, inconsistent relationship with procrastination, indicating that this trait is not a strong indicator of task delay. The results of my study support this inconsistency, as extraversion was not correlated with procrastination. One explanation that may account for the differing correlations across these studies may be that different measures of extraversion were used. In the present investigation, extraversion was measured by the Eysenck Personality Questionnaire whereas the previous studies used the NEO-PI as their measure of extraversion. Extraversion is subsumed by different facets on each of these scales and as Terracciano and Costa (2004) note, these differences may explain the inconsistent results.

The conclusion that the arousal-based personality traits are not related to procrastination may seem surprising considering that the rationalization of “I work best under pressure” is commonly offered as reason for procrastination. This research however, has demonstrated that the empirical evidence necessary to support a link between this rationalization for procrastination and the arousal-based personality traits is very weak. Specifically, this study demonstrates that all of the arousal-related personality traits combined only account for approximately 5% of the variance in why individuals believe they procrastinate for arousal-related reasons. This finding is discussed in more detail in the following section.

Reasons for Procrastination and Identifying the Arousal Procrastinator

The second section of the PASS scale includes questions asking participants to endorse various reasons for why they believe that they procrastinate. It was hypothesized that evidence for arousal procrastination could be found by identifying and comparing two groups of individuals: one group that strongly believed they procrastinate due to a need for arousal, and another group who did not endorse these arousal-related reasons for procrastination as strongly. Through the statistical procedures outlined previously, two groups of participants were formulated according to the extent of their endorsement of the Risk-Taking/Arousal component of the reasons for procrastination questions on the PASS scale. High and low groups were formed; the participants labeled as “high” endorsed arousal-related reasons for their procrastination more strongly than did the corresponding group labeled as “low.” It was demonstrated that, as compared to the low group, participants in the high group had statistically significant higher scores on all of the arousal-based personality measures and the measure of trait procrastination,

indicating that these individuals had a stronger propensity for procrastination and were characterized by more intense arousal-based characteristics. It should be noted however, that the significant differences between these groups on the measures of arousal-based traits and the trait measure of procrastination (i.e., the GP scale) were all extremely small. For example, the effect size of the differences between the high and low groups' scores on the GP scale was, $\eta^2 = .02$, or 2%. Expressed as group means, the average GP score for the low group was 63.56 (95% CI 61.73, 65.39) while the average score for the high group was 66.64 (95% CI 64.79, 68.50).

Even though these differences are sufficiently large to reach statistical significance, in real terms, the magnitude of these differences provides little information regarding the propensity to procrastinate among each of these groups. Furthermore, there is a slight overlap between the confidence intervals of each group's average GP scores, providing additional evidence for the small differences between these two groups' inclination to procrastinate.

Given these results, a regression analysis was conducted in order to determine the extent to which the arousal-based personality traits were able to predict why participants believed that they procrastinated for arousal-related reasons. It was found that only about 5% of the variance in why participants endorsed arousal-related reasons for their procrastination could be explained by their scores on the three arousal-based measures of personality. In other words, 95% of the variance as to why participants endorsed arousal-related reasons for their procrastination could not be explained by the arousal-based measures of personality alone. Clearly, other factors in addition to scores on the arousal-based measures of personality were influencing participants' explanations as to why they

procrastinate for arousal-related reasons. Even though these conclusions do not provide strong evidence for the arousal procrastinator, they do add to our understanding of the relationship between arousal-based personality traits and procrastination. Firstly, these conclusions indicate that some individuals will explain their procrastination by citing arousal-related reasons. Secondly however, it is demonstrated that these beliefs about why one procrastinates is only weakly related to the scales measuring arousal-based personality traits. This finding clearly demonstrates that a large amount of the variance in why individuals claim that they procrastinate for arousal-based reasons is left unaccounted for, even when using the seemingly best predictors: the arousal-based measures of personality.

Considering that the present investigation provides little empirical evidence for arousal-based procrastination, why is it that some individuals continually cite these arousal-based reasons (e.g., “I work best under pressure”) as major factors contributing to their task delay? There is no concise answer to this question although there are many plausible explanations.

The explanation outlined in the introduction to this paper may have the most face validity when considering why anyone might procrastinate for arousal-related reasons. Some people may truly enjoy the excitement of working on a project at the last minute. As Larsen and Zarate (1991) have demonstrated, people will engage in ostensibly paradoxical behaviour if they are sufficiently under aroused and are seeking to attain their optimal level of arousal. Working on a task at the last minute may be the external cue or situation required to motivate an individual to start working, which in turn, likely sets off an internal process characterized by excitement and a physiological “rush.” Although the

present investigation found little evidence for this rationale for procrastination, this does not conclusively mean that a small subset of individuals might not engage in procrastinatory behaviour for reasons such as these.

Alternatively however, what if arousal-based procrastination has little to do with higher scores on arousal-based measures of personality and more to do with the reduction of the psychological tension that arises from procrastination? This psychological tension, referred to as cognitive dissonance, is exemplified by the individual who intends to start working on a certain task but never follows through with this intention. Specifically, cognitive dissonance is characterized by a state of psychological tension resulting from the awareness of contradictory cognitions (e.g., Festinger, 1957). For example, intending to complete a task before a deadline and then procrastinating on this particular task would lead to cognitive dissonance. One's behaviour, not working on the intended task, is dissonant with one's plans and goals of working on the task. In order to reduce the aversive psychological tension associated with cognitive dissonance, this individual may modify his or her behaviours or cognitions. Of course, modifying one's behaviours would mean getting started on the task at hand; however, if the individual is procrastinating, clearly this is not happening. Therefore, the easiest method in attenuating the psychological tension associated with cognitive dissonance is to modify the cognitions causing the psychological imbalance. Instead of feeling guilty for not getting started on a task, an individual may reassure him or herself that things are going according to plan by enlisting seemingly logical, socially acceptable reasons for his or her delay. These rationalizations might include reassuring oneself that: "I can delay this project for now because I work better under pressure." The use of this specific

rationalization however, might be more of a by-product of previous behaviour than it is an insight into the potential underlying arousal-based motives for procrastination.

If it is assumed that the external pressure of a deadline is the motivating stimulus enabling an individual to begin working on a task, it might be that this individual is enlisting the rationalization of “I work better under pressure” because traditionally, this has been the only time that he or she has ever started working on a given task (e.g., at the last minute). This rationalization could be characterized as a self-fulfilling prophecy, whereby a person claims that he or she works best under pressure. For example, if a fourth year university student has traditionally only begun to work on his or her assignments just before the deadline, this person may falsely believe that he or she works best under these conditions, when in fact these are really the only conditions that the student have ever worked under. The self-fulfilling prophecy relates well to this process, as the university student in question may genuinely believe that he or she works best under pressure, further inducing behaviour consistent with this notion.

If an individual truly procrastinated because he or she worked better or craved the excitement of working under pressure, it would be logical to assume that the arousal-based personality traits of these individuals would correlate to procrastination. In the present study there was no correlation between any of the arousal-based traits and the various measures of procrastination overall. Furthermore, considering these results, coupled with the small amount of variance that the arousal-based traits were able to predict in the arousal-based beliefs for procrastination, it seems logical to conclude that these rationalizations for procrastination (e.g., “I work best under pressure”) might not have as much to do with “arousal procrastination” as previously believed. It might just

be that these types of rationalizations are enlisted because certain individuals have only been able to get going on a task when the deadline is fast approaching and they absolutely need to start working. Therefore, it seems like these seemingly “arousal-based rationalizations” for procrastination are more typically excuses or self-deceptions used to help attenuate cognitive dissonance, as opposed to genuine motives for task delay.

Limitations and Future Research

There are a number of issues which limit the conclusions that can be drawn from this study. For instance, the sample of participants used consisted entirely of undergraduate psychology students, with a mean age of approximately 20 years. Although this sample is appropriate for the present study, given that many of the procrastination scales relate to academic procrastination (e.g., PASS and PCS), generalizing the results beyond this cohort should be done with caution. It should be noted, however, that the criticisms of the earlier work reported by Ferrari (1992) is not affected by the use of a student sample, as he also used a convenience sample of students in his research.

In addition, the beliefs about the reasons for why participants procrastinated in this study were based solely on an academic task. Arousal procrastination may relate to this form of procrastination in specific ways. For example, the reasons for delaying completing a school related assignment are likely different from the reasons contributing to the delay in scheduling a medical check-up. Perhaps if a new scale was developed assessing the reasons for why individuals might procrastinate across a spectrum of tasks and scenarios, a better understanding of how the arousal-based personality traits relate to these types of task-delays could be achieved. Another potentially useful method in

assessing why some individuals might procrastinate would be to adopt an experimental approach where participants would be required to complete a specific task by a certain date. Experience sampling could then be used in order to assess the reasons for why these participants believe that they are procrastinating. Both naturalistic observations and self-report information could be used in tandem, to ameliorate the potential pitfalls of relying exclusively on self-report data.

Another limitation of the present study, which is a common limitation of many psychological experiments, was that it relied exclusively on self-report data. The challenge in relying exclusively on self-report information is that it assumes participants are able to recall and are aware of their cognitive processes. In the landmark paper written by Nisbett and Wilson (1977) skepticism was expressed by the authors about the validity and veracity of self-report information. These authors maintained that when individuals attempt to account for their cognitive processes they do so, not based on true introspection, but rather based on a priori beliefs or provisional causal theories. However, Nisbett and Wilson note that although individuals cannot directly observe their cognitive processes, they are able to accurately account for them in situations where the preceding stimuli causing the specific response, is overtly salient to them.

Gazzaniga (2002) provides empirical evidence as to why humans offer explanations for their behaviour, even when they are unsure of the underlying causes. Gazzaniga states that the interpretive mechanisms for behaviour are located in the left hemisphere of the brain. This hemisphere is constantly working to seek out meaning and reason, even when this meaning and reason may not exist. This process is an evolutionary one that attempts to understand why certain events happen, so that if these

events are encountered again in the future they will be easier to deal with (Gazzaniga, 2002).

This process relates well to the perpetuation of procrastination motivated by a need for arousal. As was demonstrated in the present study, some people do believe that they procrastinate because of a need for arousal. However, as was also demonstrated in the present investigation, the seemingly best predictors of why individuals would endorse these arousal-based reasons for procrastination (i.e., the arousal-based personality traits) were only able to account for a small amount of the variance in this process. It is very possible that as Gazzaniga (2002) notes, these individuals may be trying to interpret the reasons for their procrastination, even though the underlying causes may not be explicitly known. Therefore, psychological research relying on self-report information must take seriously the caveats espoused by Nisbett and Wilson (1997) indicating that participants in psychological experiments might potentially express more than they know.

Although this discussion of the awareness of certain cognitive processes might be the case for some latent psychological functions, there are limits to what we are aware of, and what we may not be aware of. Given that the present study was concerned with procrastination, a volitional action, it is assumed that participants of this study had some insight into why they decide to behave in this manner. As previously mentioned, future research might benefit from an experimental approach using both naturalistic observations and self-report information, helping to mitigate these potential sources of measurement error.

One of the most interesting ideas to arise from the completion of this research was the question of whether or not the quality of work completed by an individual working to

complete a task at the last minute is in fact better than the quality of work completed by an individual who has ample amounts of time to complete the task at hand. This is certainly what participants are endorsing when they say that they work better at the last minute. Empirical evidence addressing this question is lacking, creating a good platform for future research opportunities. However, individuals who claim to work best under pressure may have biased views. As explored previously in this paper, if an individual only ever works on a task near the deadline he or she may not be aware of what the quality of his or her work might be had it been completed with time to spare.

What about individuals who intend to start working on a task at the last minute, not because they believe they work best under pressure, but because this situation provides them the incentive to begin their work; is this process still classified as procrastination? The difficulty with this type of task delay is that it contradicts the definition of procrastination outlined at the beginning of this thesis. This delay is *intended* and seemingly *rational*. However, upon closer examination, this type of delay still possesses many irrational characteristics justifying the label of procrastination. For example, by leaving a task until the last minute, an individual is still potentially undermining his or her work. By willfully delaying a task until it can be delayed no further, this individual is taking on many unnecessary risks (e.g., computer failure, power outage, etc.) that may jeopardize the completion of the task in question. Put simply, while the individual's motivational state for a seemingly aversive task may be optimal after a lengthy delay, his or her temporal work conditions may not be.

Conclusion

In sum, the findings of my thesis demonstrate that: 1) the GP scale did not measure arousal procrastination, and 2) that there is little evidence linking the arousal-based personality traits to either procrastination or to the arousal-related beliefs that people endorse as a cause for their procrastination. In the end, it is clear that the arousal-based personality traits provide little to no evidence supporting the conception of the “arousal procrastinator.” It seems that these reasons may be enlisted primarily as a way to reduce cognitive dissonance. Therefore, individuals who claim that they are motivated to procrastinate because they believe that they work better under pressure are likely fooling themselves, providing a seemingly believable explanation to excuse their procrastinatory behaviour. Future research should seek to more clearly identify why it is that some individuals maintain that they work best under pressure, even though the empirical evidence does not support this notion of procrastination.

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Appendix A
Demographic Questionnaire

General Information:

Sex (*please circle*): Male Female

Age: _____ years

What year of university are you in? (*please circle*)

 1st 2nd 3rd 4th

What is the racial/ethnic group you most identify with? (e.g., Caucasian, Native-Canadian, Chinese, South East Asian, African, etc.):

(please write in space provided)

Appendix B
GP

Instructions:

People may use the following statements to describe themselves. For each statement, decide whether the statement is uncharacteristic or characteristic of you using the following 5 point scale. Note that the 3 on the scale is Neutral – the statement is neither characteristic nor uncharacteristic of you. In the box to the right of each statement, fill in the number on the 5 point scale that best describes you.

Extremely Uncharacteristic	Moderately Uncharacteristic	Neutral	Moderately Characteristic	Extremely Characteristic
1	2	3	4	5

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

Appendix C

EPQ-RS

Instructions: Please answer each of the questions by putting a circle around the 'YES' or the 'NO' following the question. There are no right or wrong answers, and no trick questions. Work quickly and do not think too long about the exact meaning of the questions.

PLEASE REMEMBER TO ANSWER EACH QUESTION

- | | | |
|--|-----|----|
| 1. Does your mood often go up and down?..... | YES | NO |
| 2. Do you take much notice of what people think? | YES | NO |
| 3. Are you a talkative person?..... | YES | NO |
| 4. If you say you will do something, do you always keep your promise no matter how inconvenient it might be? | YES | NO |
| 5. Do you ever feel 'just miserable' for no reason? | YES | NO |
| 6. Would being in debt worry you?..... | YES | NO |
| 7. Are you rather lively?..... | YES | NO |
| 8. Were you ever greedy by helping yourself to more than your share of anything?..... | YES | NO |
| 9. Are you an irritable person?..... | YES | NO |
| 10. Would you take drugs which may have strange or dangerous effects?..... | YES | NO |
| 11. Do you enjoy meeting new people? | YES | NO |
| 12. Have you ever blamed someone for doing something that you knew was really your fault? | YES | NO |
| 13. Are your feelings easily hurt? | YES | NO |
| 14. Do you prefer to go your own way rather than act by the rules?..... | YES | NO |
| 15. Can you usually let yourself go and enjoy yourself at a lively party?..... | YES | NO |
| 16. Are <i>all</i> your habits good and desirable ones?..... | YES | NO |
| 17. Do you often feel "fed-up"? | YES | NO |
| 18. Do good manners and cleanliness matter much to you? | YES | NO |
| 19. Do you usually take the initiative in making new friends? | YES | NO |
| 20. Have you ever taken anything (even a pin or a button) that belonged to someone else?..... | YES | NO |
| 21. Would you call yourself a nervous person? | YES | NO |
| 22. Do you think marriage is old-fashioned and should be done away with? | YES | NO |
| 23. Can you easily get some life into a rather dull party? | YES | NO |
| 24. Have you ever broken or lost something belonging to someone else?..... | YES | NO |
| 25. Are you a worrier? | YES | NO |
| 26. Do you enjoy co-operating with others? | YES | NO |
| 27. Do you tend to keep in the background on social occasions? | YES | NO |
| 28. Does it worry you if you know there are mistakes in your work?..... | YES | NO |
| 29. Have you ever said anything bad or nasty about anyone?..... | YES | NO |
| 30. Would you call yourself tense or 'highly-strung'?..... | YES | NO |
| 31. Do you think people spend too much time safeguarding with savings and insurances?..... | YES | NO |
| 32. Do you like mixing with people? | YES | NO |
| 33. As a child were you ever cheeky to your parents?..... | YES | NO |
| 34. Do you worry too long after an embarrassing experience? | YES | NO |
| 35. Do you try not to be rude to people?..... | YES | NO |
| 36. Do you like plenty of bustle and excitement around you? | YES | NO |
| 37. Have you ever cheated at a game? | YES | NO |
| 38. Do you suffer from 'nerves'? | YES | NO |
| 39. Would you like other people to be afraid of you?..... | YES | NO |

40. Have you ever taken advantage of someone?.....YES NO
41. Are you mostly quiet when you are with other people?YES NO
42. Do you feel lonely?YES NO
43. Is it better to follow society's rules than to go your own way?.....YES NO
44. Do other people think of you as being very lively?.....YES NO
45. Do you always practice what you preach?YES NO
46. Are you often troubled of feelings of guilt?YES NO
47. Do you sometimes put off until tomorrow what you ought to do today?.....YES NO
48. Can you get a party going?.....YES NO

Appendix D
SSS-V

Directions: Each of the items below contains two choices A and B. Please indicate which of the choices most describes your likes or the way you feel. In some cases you may find items in which both cases describe your likes or feelings. Please choose the one that better describes your likes or feelings. In some cases you may find items in which you do not like either choice. In this case mark the choice that you dislike least. Do not leave any items blank. It is important you respond to all items with only one choice, A or B. We are interested only in your likes and feelings, not in how others feel about these things or how one is supposed to feel. There are no right or wrong answers as in other kinds of tests. Be frank and give your honest appraisal of yourself.

1. A. I like "wild" uninhibited parties.
B. I prefer quiet parties with good conversation.
2. A. There are some movies I enjoy seeing a second or even third time.
B. I can't stand watching a movie I've seen before.
3. A. I often wish I could be a mountain climber.
B. I can't understand people who risk their necks climbing mountains.
4. A. I dislike all body odors.
B. I like some of the earthy body smells
5. A. I get bored seeing the same old faces.
B. I like the comfortable familiarity of everyday faces.
6. A. I like to explore a strange city or section of town by myself, even if it means getting lost.
B. I prefer a guide when I am in a place I don't know well.
7. A. I dislike people who say things just to shock or upset others.
B. When you can predict almost everything a person will do and say he or she must be a bore.
8. A. I usually don't enjoy a movie or play where I can predict what will happen in advance.
B. I don't mind watching a movie or play where I can predict what will happen in advance.
9. A. I have tried marijuana or would like to.
B. I would never smoke marijuana.
10. A. I would not like to try any drug that would produce strange and dangerous effects on me.

- B. I would like to try some of the drugs that produce hallucinations.
11. A. A sensible person avoids activities that are dangerous.
B. I sometimes like to do things that are a little frightening.
12. A. I dislike “swingers” (people who are uninhibited and free about sex).
B. I enjoy the company of real “swingers”.
13. A. I find that stimulants make me uncomfortable.
B. I often like to get high (drinking liquor or smoking marijuana).
14. A. I like to try new foods that I have never tasted before.
B. I order the dishes with which I am familiar so as to avoid disappointment and unpleasantness.
15. A. I enjoy looking at home movies, videos, or travel slides.
B. Looking at someone’s home movies, videos, or travel slides bores me tremendously.
16. A. I would like to take up the sport of water skiing.
B. I would not like to take up water skiing.
17. A. I would like to try surfboard riding.
B. I would not like to try surfboard riding.
18. A. I would like to take off on a trip with no preplanned or definite routes, or timetable.
B. When I go on a trip I like to plan my route and timetable fairly carefully.
19. A. I prefer the “down to earth” kinds of people as friends.
B. I would like to make friends in some of the “far-out” groups like artists or “punks.”
20. A. I would not like to learn to fly an airplane.
B. I would like to learn to fly an airplane.
21. A. I prefer the surface of the water to the depths.
B. I would like to go scuba diving.
22. A. I would like to meet some persons who are homosexual (men or women).
B. I stay away from anyone I suspect of being “gay” or “lesbian.”
23. A. I would like to try parachute jumping.
B. I would never like to try jumping out of a plane, with or without a parachute.

24. A. I prefer friends who are excitingly unpredictable.
B. I prefer friends who are reliable and predictable.
25. A. I am not interested in experience for its own sake.
B. I like to have new and exciting experiences and sensations even if they are a little frightening, unconventional, or illegal.
26. A. The essence of good art is in its clarity, symmetry of form, and harmony of colours.
B. I often find beauty in “clashing” colours and irregular forms of modern paintings.
27. A. I enjoy spending time in the familiar surroundings of home.
B. I get very restless if I have to stay around home for any length of time.
28. A. I like to dive-off the high board.
B. I don’t like the feeling I get standing on the high board (or I don’t go near it at all).
29. A. I like to date persons who are physically exciting.
B. I like to date people who share my values.
30. A. Heavy drinking usually ruins a party because some people get loud and boisterous.
B. Keeping the drinks full is the key to a good party.
31. A. The worst social sin is to be rude.
B. The worst social sin is to be a bore.
32. A. A person should have considerable sexual experience before marriage.
B. It’ better if two married persons begin their sexual experience with each other.
33. A. Even if I had money, I would not care to associate with flighty rich persons in the “jet set.”
B. I could conceive of myself seeking pleasures around the world with the “jet set.”
34. A. I like people who are sharp and witty even if they do sometimes insult others.
B. I dislike people who have their fun at the expense of hurting the feelings of others.
35. A. There is altogether too much portrayal of sex in movies.
B. I enjoy watching many of the “sexy” scenes in movies.

- 36. A. I feel best after having a couple of drinks.
B. Something is wrong with people who need liquor to feel good.
- 37. A. People should dress according to some standard of taste, neatness, and style.
B. People should dress in individual ways even if the effects are sometimes strange.
- 38. A. Sailing long distances in small sailing crafts is foolhardy.
B. I would like to sail a long distance in a small but seaworthy sailing craft.
- 39. A. I have no patience with dull or boring persons.
B. I find something interesting in almost every person I talk to.
- 40. A. Skiing down a high mountain slope is a good way to end up on crutches.
B. I think I would enjoy the sensations of skiing very fast down a high mountain slope.

Appendix E Form G2

Directions: Please write a number from 1 to 6 beside each statement below indicating how much you agree with it as it applies to you. In making your responses please use the following scales:

- 1 = Strongly Disagree
- 2 = Disagree
- 3 = Weakly Disagree
- 4 = Weakly Agree
- 5 = Agree
- 6 = Strongly Agree

Remember, 1 means *Strongly Disagree* and 6 means *Strongly Agree*. All responses are strictly confidential.

- ___ 1. I drink a lot of coffee.
- ___ 2. I crave excitement.
- ___ 3. I am a "swinger."
- ___ 4. I started smoking at an early age.
- ___ 5. I like to be alone.
- ___ 6. I would like a job that required a lot of traveling.
- ___ 7. I study a lot on school nights.
- ___ 8. I don't like jobs that require attention to detail.
- ___ 9. I am a heavy smoker.
- ___ 10. I have a lot of curiosity.
- ___ 11. I tend to be shy and withdrawn.
- ___ 12. I enjoy rock bands.
- ___ 13. I enjoy the thrills of watching car races.
- ___ 14. I am not bothered much by cold temperatures.
- ___ 15. I participate in behaviour that could be termed delinquent.
- ___ 16. I lack the drive necessary to get as much done as other people do.
- ___ 17. I have difficulty concentrating on one thing for a long time at a stretch.
- ___ 18. I tend to bite my nails.
- ___ 19. I think I would enjoy participating in contact sports (e.g., football, wrestling).
- ___ 20. I enjoy "thriller" movies.
- ___ 21. I get edgy when I am alone for a long time.
- ___ 22. I am bothered by bright lights.
- ___ 23. I find that time passes quickly.
- ___ 24. I like to share recreational activities with several friends.
- ___ 25. I need more hours of sleep than the average person.
- ___ 26. I think I would enjoy participating in

- non-contact sports (e.g., golf, tennis, bowling).
- 27. I readily think of new ideas.
 - 28. I drink alcoholic beverages frequently.
 - 29. I like to take chances.
 - 30. I can stand more pain than most.
 - 31. I am bothered by having useless thoughts coming into my mind over and over.
 - 32. I can usually listen to a lecture without becoming restless.
 - 33. I like to have several projects going at the same time.
 - 34. I enjoy parties that have lots of noise, action, and varied lighting effects.
 - 35. I need more variety and change than most people.
 - 36. I think loud noises are unpleasant.
 - 37. I am the kind of person who is "on the go."
 - 38. I fall asleep easily at night.
 - 39. I participate in sports regularly.
 - 40. I prefer friends who are exciting and unpredictable.
 - 41. I fear getting an injection.
 - 42. I grew up in a large city.
 - 43. I am bored.
 - 44. I feel full of energy.
 - 45. I look forward to new experiences.

Appendix F
PASS

AREAS OF PROCRASTINATION

For each of the following activities, please rate the degree to which you delay or procrastinate. Rate each item on an 'a' to 'e' scale according to how often you wait until the last minute to do the activity. Then, indicate on an 'a' to 'e' scale the degree to which you feel procrastination on the task is a problem. Finally, indicate on an 'a' to 'e' scale the degree to which you would like to decrease your tendency to procrastinate on each task. Mark your answers by circling the appropriate letter below each question.

I. Writing a Term Paper

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

a	b	c	d	e
<i>Never procrastinate</i>	<i>Almost never</i>	<i>Sometimes</i>	<i>Nearly always</i>	<i>Always procrastinate</i>

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

a	b	c	d	e
<i>Not at all a problem</i>	<i>Almost never</i>	<i>Sometimes</i>	<i>Nearly always</i>	<i>Always a problem</i>

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

a	b	c	d	e
<i>Do not want to decrease</i>		<i>Somewhat</i>		<i>Definitely want to decrease</i>

II. Studying for Exams

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

a	b	c	d	e
<i>Never procrastinate</i>	<i>Almost never</i>	<i>Sometimes</i>	<i>Nearly always</i>	<i>Always procrastinate</i>

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

a	b	c	d	e
<i>Not at all a problem</i>	<i>Almost never</i>	<i>Sometimes</i>	<i>Nearly always</i>	<i>Always a problem</i>

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

a	b	c	d	e
---	---	---	---	---

*Do not want to decrease**Somewhat**Definitely want to decrease*

III. Keeping Up Weekly Reading Assignments

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

a b c d e
Never procrastinate *Almost never* *Sometimes* *Nearly always* *Always procrastinate*

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

a b c d e
Not at all a problem *Almost never* *Sometimes* *Nearly always* *Always a problem*

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

a b c d e
Do not want to decrease *Somewhat* *Definitely want to decrease*

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

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

a b c d e
Never procrastinate *Almost never* *Sometimes* *Nearly always* *Always procrastinate*

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

a b c d e
Not at all a problem *Almost never* *Sometimes* *Nearly always* *Always a problem*

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

a b c d e
Do not want to decrease *Somewhat* *Definitely want to decrease*

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

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

a b c d e
Never procrastinate Almost never Sometimes Nearly always Always procrastinate

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

a b c d e
Not at all a problem Almost never Sometimes Nearly always Always a problem

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

a b c d e
Do not want to decrease Somewhat Definitely want to decrease

VI. School Activities in General

16. To what degree do you procrastinate on these activities?

a b c d e
Never procrastinate Almost never Sometimes Nearly always Always procrastinate

17. To what degree is procrastination on these activities a problem for you?

a b c d e
Not at all a problem Almost never Sometimes Nearly always Always a problem

18. To what extent do you want to decrease your tendency to procrastinate on these activities?

a b c d e
Do not want to decrease Somewhat Definitely want to decrease

REASONS FOR PROCRASTINATION

Think of the last time the following situation occurred. It's near the end of the semester. The term paper you were assigned at the beginning of the semester is due very soon. You have not begun work on this paper. There are reasons why you have been procrastinating on this task.

Rate each of the following reasons on a 5-point scale according to how much it reflects why you procrastinated at the time. Mark your answers by writing the letter, "a" to "e" in the space to the left of each statement.

Use the scale:

a	b	c	d	e
<i>(Not at all reflects why I procrastinated)</i>		<i>(Somewhat reflects)</i>		<i>(Definitely reflects why I procrastinated)</i>

1. You were concerned the professor wouldn't like your work.
2. You had a hard time knowing what to include and what not to include in your paper.
3. You waited until a classmate did his/hers so that he/she could give you some advice.
4. You had too many other things to do.
5. There's some information you needed to ask the professor, but you felt uncomfortable approaching him/her.
6. You were worried you would get a bad grade.
7. You resented having to do things assigned by others.
8. You didn't think you knew enough to write the paper.
9. You really dislike writing term papers.
10. You felt overwhelmed by the task.
11. You had difficulty requesting information from other people.
12. You look forward to the excitement of doing this task at the last minute.
13. You couldn't choose among all the topics.
14. You were concerned that if you did well, your classmates would resent you.
15. You didn't trust yourself to do a good job.
16. You didn't have enough energy to begin the task.

17. You felt it just takes too long to write a term paper.
18. You liked the challenge of waiting until the deadline.
19. You knew that your classmates hadn't started the paper either.

Added:

20. You work best under pressure, that's why you're putting it off.
21. You need complete silence before you can begin to work on any school related projects.
22. You need to have caffeine before you can start working on any essay.
23. You only like working in groups where there are other people to keep you company.

Appendix G

PCS

PART A: At the start of the present or last academic year, you had to do a few administrative tasks. Please indicate how you did these tasks in comparison with your intention to do them.

1. a. Registered as a student...

- Upon receipt of forms
- Early August
- Late August
- After September

b. Intended to do so...

- Upon receipt of forms
- Early August
- Late August
- After September

2. a. Read through the study guide...

- Upon receipt
- After a few days
- After a few weeks
- Not yet

b. Intended to do so...

- Upon receipt
- After a few days
- After a few weeks
- Not yet

3. a. Made a selection of courses...

- Amply before the term began
- Just before term began
- In the course of the term
- At exam time.

b. Intended to do so...

- Amply before the term began
- Just before term began
- In the course of the term
- At exam time

PART B: For the last semester in which you attended lectures, please indicate how you did that in comparison with your intention to do so.

1. a. Present at lectures...

- Always
- Most of the time
- Half of the time
- Seldom

b. Intended to be...

- Always
- Most of the time
- Half of the time
- Seldom

2. a. Listened with concentration...

- Always
- Most of the time
- Half of the time
- Seldom

b. Intended to do so...

- Always
- Most of the time
- Half of the time
- Seldom

3. a. Took notes...

- All the time
- Most of the time
- Half of the time
- Less than half of the time

b. Intended to do so...

- Always
- Most of the time
- Half of the time
- Seldom

PART C: For the last three exams you intended to do, please indicate how (on the average) you performed the following actions in comparison with your intention to perform them.

1. a. Obtained books and papers...

- Before term began
- As term began
- In course of lectures
- Just before exam

b. Intended to do so...

- Before term began
- As term began

- In course of lectures
 - Just before exam
2. a. Registered for examination...
- First day registration
 - After awhile
 - Last occasion possible
 - Too late
- b. Intended to do so...
- First day registration
 - After awhile
 - Last occasion possible
 - Too late
3. a. Started studying (homework)...
- Beginning of lectures
 - Amply in time
 - Just in time
 - Too late
- b. Intended to do so...
- Beginning of lectures
 - Amply in time
 - Just in time
 - Too late
4. a. Started making study notes...
- Beginning of lectures
 - Amply in time
 - Just in time
 - Too late
 - Not at all
- b. Intended to do so...
- Beginning of lectures
 - Amply in time
 - Just in time
 - Too late
 - Not at all
5. a. Rehearsing materials...
- After first lectures
 - Amply in time
 - Just in time
 - Too late
- b. Intended to do so...
- After first lectures
 - Amply in time
 - Just in time
 - Too late

Appendix H

Rotated factor structure and item loadings of the General Procrastination Scale (GP) and the Sensation Seeking Scale – V (SSS-V).

	Factor					
	1	2	3	4	5	6
GP # 1	.417	--	--	--	--	--
GP # 2	.627	--	--	--	--	--
GP # 3	--	--	--	--	--	--
GP # 4	--	--	--	--	.310	--
GP # 5	--	--	--	--	--	--
GP # 6	--	--	--	--	.398	--
GP # 7	.485	--	--	--	--	--
GP # 8	--	--	--	--	.755	--
GP # 9	.697	--	--	--	--	--
GP # 10	.660	--	--	--	--	--
GP # 11	--	--	--	--	--	--
GP # 12	.637	--	--	--	--	--
GP # 13	--	--	--	--	--	--
GP # 14	.595	--	--	--	--	--
GP # 15	.557	--	--	--	--	--
GP # 16	.403	--	--	--	--	--
GP # 17	.480	--	--	--	--	--
GP # 18	.483	--	--	--	.452	--
GP # 19	.676	--	--	--	.355	--
GP # 20	.468	--	--	--	.340	--
SSS-V # 1	--	--	.571	--	--	--
SSS-V # 2	--	--	--	--	--	--
SSS-V # 3	--	.664	--	--	--	--
SSS-V # 4	--	--	--	--	--	--
SSS-V # 5	--	--	--	.335	--	--
SSS-V # 6	--	.392	--	.334	--	--
SSS-V # 7	--	--	--	.548	--	--
SSS-V # 8	--	--	--	.376	--	--

SSS-V # 9	--	--	.434	--	--	.415
SSS-V # 10	--	--	--	.368	--	--
SSS-V # 11	--	.586	.367	--	--	.520
SSS-V # 12	--	--	--	--	--	--
SSS-V # 13	--	--	.705	--	--	--
SSS-V # 14	--	--	--	--	--	--
SSS-V # 15	--	--	--	--	--	--
SSS-V # 16	--	.534	--	--	--	.302
SSS-V # 17	--	.537	--	--	--	--
SSS-V # 18	--	.339	--	.346	--	--
SSS-V # 19	--	--	--	.309	--	--
SSS-V # 20	--	.465	--	--	--	--
SSS-V # 21	--	.412	--	--	--	--
SSS-V # 22	--	--	--	--	--	.370
SSS-V # 23	--	.629	--	--	--	--
SSS-V # 24	--	--	--	.358	--	--
SSS-V # 25	--	.481	.367	--	--	.573
SSS-V # 26	--	--	--	--	--	--
SSS-V # 27	--	--	--	--	--	--
SSS-V # 28	--	.453	--	--	--	--
SSS-V # 29	--	--	.450	.351	--	--
SSS-V # 30	--	--	.688	--	--	--
SSS-V # 31	--	--	--	.448	--	--
SSS-V # 32	--	--	.343	--	--	--
SSS-V # 33	--	--	--	--	--	--
SSS-V # 34	--	--	--	.409	--	--
SSS-V # 35	--	--	.307	--	--	--
SSS-V # 36	--	--	.532	--	--	--
SSS-V # 37	--	--	--	--	--	.454
SSS-V # 38	--	.314	--	--	--	--
SSS-V # 39	--	--	--	--	--	--
SSS-V # 40	--	.566	.323	--	--	--

Note. Factor loadings < .300 have been suppressed.

Appendix I

Rotated Component Structure of the PASS Reasons Scale

	Factor				
	1	2	3	4	5
PASS Reasons #1	.621	.481	-.051	.216	-.284
PASS Reasons #2	.432	.499	.284	.352	-.307
PASS Reasons #3	.474	.122	.118	-.089	.469
PASS Reasons #4	.387	.711	.339	.203	-.014
PASS Reasons #5	-.081	-.091	.086	-.029	.686
PASS Reasons #6	.417	.761	.181	.260	-.243
PASS Reasons #7	.546	.446	.407	.136	-.107
PASS Reasons #8	.711	.388	.143	.181	-.125
PASS Reasons #9	.435	.598	.354	.463	-.383
PASS Reasons #10	.636	.124	.421	.029	.208
PASS Reasons #11	.225	.062	.642	-.027	.328
PASS Reasons #12	.368	.031	.533	.007	.546
PASS Reasons #13	.604	.486	.423	.202	-.106
PASS Reasons #14	.000	.045	.155	.701	.140
PASS Reasons #15	.264	.435	.132	.855	-.269
PASS Reasons #16	.512	.051	.314	.206	.153
PASS Reasons #17	.456	.683	.091	.462	-.541
PASS Reasons #18	.707	.463	.276	.056	-.198
PASS Reasons #19	.179	.233	.597	.102	-.052
PASS Reasons #20	.290	.214	.780	.129	.101

PASS Reasons #21	.272	.228	.574	.282	-.088
PASS Reasons #22	.251	.452	.112	.809	-.364
PASS Reasons #23	.272	.691	.203	.295	-.023

Note. Bolded component loadings represent the items that define each component.

Appendix J

Informed Consent: Procrastination and Sensation Seeking: Is there really an “arousal procrastinator”?

The purpose of an informed consent is to ensure that you (the participant) understand the purpose of the study and the nature of your involvement. The informed consent must provide sufficient information to you so that you have the opportunity to determine whether you wish to participate in the study.

Research Personnel: The following people are involved in this research project and may be contacted if you have any questions about the research: Kyle Simpson (M.A. Candidate, wksimpso@connect.caleton.ca) and Dr. Timothy A. Pynchyl (Faculty Advisor, 520-2600, x. 1403). Should you have any ethical concerns about this study please contact Dr. Anne Bowker (Departmental Chair, 520-2600 x. 2648) or Dr. Avi Parush (Chair, Carleton University Ethics Committee for Psychological Research, 520-2600, x. 6026).

Purpose: The purpose of the present study is to clarify and further understand the relationship between sensation seeking and procrastination.

Task requirements and duration: You will be asked to complete a series of 7 questionnaires that should take approximately 40 minutes to complete. These questionnaires will attempt to measure certain aspects of your personality, how often you engage in procrastinatory behaviour and the reasons for this behaviour.

Potential risk/discomfort: It is possible that some of the questions included within the questionnaire package may cause some discomfort for some people. Keep in mind that it is your choice to answer any questions that may make you feel distressed. You may omit any question without penalty.

Anonymity/confidentiality: The data collected in this study will be anonymous and confidential. All data collected will be assigned a numeric code and will not include any identifying information (e.g., names or student numbers). The data will be available only to researchers associated with the project.

Right to withdraw: Your participation in this study is completely voluntary and you have the right to stop participating at any time for any reason without penalty. You also have the right to not respond to any question(s).

I have read the above description of the study and I am aware that my participation is completely voluntary and that the data gathered are anonymous and confidential. My signature indicates that I agree to participate in the study.

Participant's Name: _____ Date: _____

Participant's Signature: _____

Appendix K

Debriefing: Procrastination and Sensation Seeking: Is there really an “arousal procrastinator”?

What is the purpose of this study?

The purpose of this study was to empirically test whether or not people procrastinate in order to boost their physiological arousal. For example, is it true that people delay working on a task because they can only motivate themselves to work when their deadline is fast approaching and they are experiencing a physiological “rush”?

Why is this research important?

This research is important because it may support reasons for procrastination that have received little research attention and empirical support in the past. Furthermore, procrastination is extremely pervasive, with people from all walks of life suffering from its consequences. Therefore, any new information empirically identifying a group of participants who procrastinate for arousal-related reasons could have significant implications for both the treatment and assessment of procrastination. For example, some treatment strategies aimed at reducing procrastination rely on identifying potential causes of the behaviour. Clearly, any new information identifying potential reasons for procrastination will be beneficial for these treatments.

What is the hypothesis for this experiment?

The main hypothesis of this experiment is that there is a very specific group of people who procrastinate because they thrive on the physiological “rush” they receive from this type of behaviour.

Where can I learn more about this topic?

Schouwenburg, H. C., (1992). Procrastinators and fear of failure: An exploration of reasons for procrastination. *European Journal of Personality*, 6, 225-236.
Ferrari, J. R. (1992). Psychometric validation of two procrastination inventories for adults: Arousal and avoidance measures. *Journal of Psychopathology and Behavioural Assessment*, 14, 97-110.

See www.procrastination.ca for more general information about procrastination

What if I have further questions about this research?

For research concerns please contact:

Kyle Simpson (Principal investigator, wksimpso@connect.carleton.ca)
Dr. Tim Pychyl (Faculty Supervisor, 613.520.2600 x. 1403
tpychyl@connect.carleton.ca)

For ethical concerns please contact:

Dr. Avi Parush (Ethics Chair, 613.520.2600 x. 6026, avi_parush@carleton.ca)

What can I do if I found this experiment to be emotionally taxing or if I'm concerned about my own procrastination?

For any health related concerns (i.e., emotional or physical) please contact Carleton University Health and Counseling Services, 520-6674.

For academic concerns, please visit the Student Academic Success Centre website and book an appointment.

http://www.carleton.ca/sasc/sasc_home/index.html