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RUNNING HEAD: Procrastination and Absorption

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Absorbed in the Moment? An Investigation of Procrastination, Absorption and Cognitive  
Failures

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**Abstract**

Mood-repair conceptualizations of procrastination suggest that regulation of immediate mood is prioritized over instrumental action towards goals. The aim of the current research was to examine how and why absorption - a mindset reflecting a responsiveness to engaging stimuli – may account for procrastinators' tendency to focus on immediately rewarding activities at the cost of their long term goals, and the cognitive implications of being absorbed in the moment. Across two student samples (Study 1:  $N = 103$ ; Study 2:  $N = 339$ ) procrastination was associated with absorption. A bootstrapping analysis of the indirect effects of procrastination on absorption through state anxiety in Study 1 was significant supporting the hypothesized role of absorption as a vulnerability towards mood-regulating distractions for procrastinators. In Study 2 small but significant indirect effects of procrastination on cognitive failures through absorption emerged, supporting the proposition that absorption may have a cognitive toll for procrastinators. Taken together, these findings suggest a cognitive escape hypothesis to explain how procrastinators deal with negative moods, and provides new insights into the factors and processes that contribute to the self-regulation difficulties that characterize trait procrastination.

## Introduction

As a problematic behavioral tendency that involves the unnecessary and voluntary delay of important intended tasks despite knowing one will be worse off for doing so (Steel, 2007), procrastination is receiving increased attention from researchers seeking to better understand its correlates and consequences. A recent theoretical review of the intra-personal processes underlying this form of self-regulation failure proposed that procrastination may be best understood as the prioritization of short-term mood regulation over long term goal achievement (Sirois & Pychyl, 2013). Indeed, a recent meta-analysis supports the notion that procrastinators have a temporal bias towards the present and away from the future which is due in part to their current negative mood states (Sirois, 2014a). In particular, procrastinators may turn their attention to tasks and experiences that are more immediately and emotionally rewarding as a way to regulate the negative mood surrounding tasks viewed as aversive or challenging (Blunt & Pychyl, 2000; Sirois & Pychyl, 2013). Although some present-focused mindsets such as mindfulness may facilitate self-regulation (Evans, Baer, & Segerstrom, 2009), there is evidence that the present-focused mindset associated with procrastination promotes being “lost in the moment” and “giving in to feel good” in a way that can derail rather than enhance self-regulation (Sirois & Tosti, 2012; Tice & Bratslavsky, 2000). These investigations converge with other research demonstrating that procrastination is associated with avoidant cognitive tendencies that promote immediate mood regulation at the expense of goal-oriented thinking (Sirois, 2004).

This account of the temporal mood regulation dynamics underlying procrastination suggests that mindsets that facilitate pleasurable escape from immediately distressing states and tasks may be important factors for understanding procrastination. Procrastination has been linked to having a hedonistic present time-orientation (Sirois, 2014a), and to having low levels of mindfulness (Sirois & Tosti, 2012). However, other related mindsets have not been fully

investigated with respect to procrastination and its consequences. The purpose of the current research was to address this gap by examining the possible links between procrastination and absorption, a quality that reflects an openness and responsiveness to engaging stimuli (Tellegen & Atkinson, 1974).

### **Absorption as an Escapist Quality**

Originally introduced in the 1970's as a trait-like correlate of hypnotizability (Tellegen & Atkinson, 1974), absorption is a quality reflecting an openness to experience cognitive and emotional **alterations** across different situations (Roche & McConkey, 1990). **Absorption is conceptually related to openness to experience, and is linked most closely to the fantasy, aesthetics, and feelings facets of openness (Glisky, Tataryn, Tobias, Kihlstrom, & McConkey, 1991).** Moreover, this tendency to enter trans-like, timeless states can be experienced as dissociative or holistic in nature depending upon the situation and the other personal characteristics present (Roche & McConkey, 1990). **Relevant for understanding of procrastination, researchers have also argued that absorption is closely related to dissociations in cognitive control and self-regulation processes (Jamieson, 2005).**

With respect to escapist tendencies, absorption as it relates to cognitive alterations of a dissociative nature has been linked to fantasy proneness and daydreaming across several studies (Roche & McConkey, 1990). Links between absorption and behaviours reflecting escapist and immediately rewarding behaviours have also been demonstrated. For example, a study of impulse buying found that individuals who scored high on absorption were more influenced by environmental sensory cues and visual stimuli, and this heightened sensitivity made them more likely to override their will power and follow their desires to make impulse purchases (Youn & Faber, 2000). Among a sample of massively-multiplayer online (MMO) gamers, absorption and

anxiety were found to be predictors of problematic Internet use, possibly because the immersive environment of MMO is especially appealing to individuals who are both anxious (and therefore avoidant oriented) and fantasy prone (Cole & Hooley, 2013).

### **Procrastination and Absorption**

There are several theoretical and empirical reasons to expect that procrastination may be associated with higher levels of absorption. According to Tellegen (1981) high absorption individuals have a mental set that is more experiential (e.g., image oriented and affectively toned) than low absorption individuals who tend to have an instrumental set (e.g., reality-oriented and practical). This distinction between experiential and instrumental mindsets has some conceptual similarities to Kuhl's (1985) distinction between state versus action orientations, with the former being associated with procrastination (Blunt & Pychyl, 1998). State orientation can interfere with action control by focusing attention on some past, present or future state rather than on taking instrumental action towards the implementation of an action plan (action orientation)(Kuhl, 1985). From the perspective of this parallel conceptualization, it is reasonable to expect that procrastination is associated with high levels of absorption.

Mood-repair conceptualizations of procrastination provide further support for the proposed link with absorption. Whether the negative states arise from the anticipation of having to complete an aversive task (Solomon & Rothblum, 1984), or from the negative self-evaluations that characterize procrastination (Flett, Stainton, Hewitt, Sherry, & Lay, 2012; Sirois, 2014b), becoming absorbed in more pleasurable activities and experiences may be one way to facilitate mood repair by providing a temporary escape from these negative emotions. This proposition is consistent with results from a meta-analysis which found a robust association between procrastination and maladaptive coping styles (average  $r = .27$ ), including avoidant coping

(Kitner & Sirois, 2013). Absorption may also heighten sensitivity and responsiveness to goal derailing situational cues, as procrastination is associated with vulnerability to situational temptations (Dewitte & Schouwenburg, 2002; Sirois & Giguère, 2013). Finally, procrastination is a known correlate of problematic Internet behaviour including “cyberslacking” (LaVoie & Pychyl, 2001; Thatcher, Wretschko, & Fridjhon, 2008), a behaviour that can serve a mood-regulating function and that is also frequent among individuals high in absorption (Cole & Hooley, 2013).

### **The Present Research**

Together this theory and research provide support for the proposition that procrastination may be linked to higher levels of absorption, and that absorption is a quality that may account for the procrastinators’ susceptibility to be distracted by more pleasurable activities as a means for dealing with negative mood states related to the completion of a challenging or aversive task. The aim of the current research was to test this hypothesis across two studies and to examine why absorption may be linked to procrastination, as well as the possible cognitive regulation implications for procrastinators of being absorbed in the moment. From a mood repair perspective, the higher levels of state anxiety associated with procrastination (Flett, Blankstein, & Martin, 1995), may explain the link between procrastination and absorption. **Given the known links between absorption and anxiety (e.g., Wolfradt & Meyer, 1998) this explanation seems plausible.** Study 1 examined this hypothesis with a mediation analysis of the indirect effects of procrastination on absorption through state anxiety. **However, it is also possible that the proposed link between procrastination and absorption varies as a function of anxiety. A moderation analysis was therefore conducted to test this alternative hypothesis.**

In the context of procrastination, it is likely that absorption reflects cognitive alterations of a dissociative nature that facilitate escape from negative mood. From this perspective it is possible that there are cognitive costs to procrastinators who tend to become absorbed in their more pleasurable distractions. There is evidence that for high-absorption individuals, external attentional demands are not compatible with their preferred experiential mindset which tends to favour effortless, internal events (Roche & McConkey, 1990). This preference may manifest as a tendency towards cognitive failures - minor lapses in memory, attentional, perceptual, and action-related capacities that can further compromise self-regulation (Broadbent, Cooper, FitzGerald, & Parkes, 1982). Indeed, procrastination is known to be linked to deficits in executive functioning which includes working memory and task monitoring (Rabin, Fogel, & Nutter-Upham, 2011). Study 2 sought to replicate and extend Study 1 by examining the link between procrastination and absorption using an alternative version of the absorption scale, and by testing the implications of procrastination on cognitive functioning through absorption with a mediation analysis to better understand the costs of absorption for trait procrastinators.

## Study 1

### Methods

#### *Participants and Procedure*

Following clearance from the university research ethics board, 103 (Mean age = 20.25, SD = 3.7, 70.9% female) undergraduate psychology students who registered for an optional participant pool signed up to participate in the study for extra course credit. Upon arriving at the lab participants read and signed a consent form and then completed a survey which was decoupled from the consent form and course credit information. Only the measures analyzed for this study are described. Scale properties are reported in Table 1.

#### *Materials*



Lay's General Procrastination scale (GPS; Lay, 1986) is a **widely used and well-validated** 20-item scale that assesses global tendencies towards procrastination across a variety of tasks. Respondents rate items on a 5-point Likert-type scale ranging from 1 (*false of me*) to 5 (*true of me*). Half of the items are reverse-scored before summing all items into a single score with high values indicating a greater tendency to procrastinate. **The GPS has demonstrated good internal consistency previously ( $\alpha = .82$ ; Lay, 1986).**

The State-trait anxiety inventory, form Y-1 (STAI-S; Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983) assessed levels of state anxiety. The STAI S-Anxiety scale is a **sensitive and widely used** 20-item measure that assess the extent of current feelings of apprehension, tension, nervousness and worry on a 4-point scale ranging from 1 (*not at all*) to 4 (*very much so*). Ten items are reverse scored before summing all items to get a total state anxiety score. **The STAI has demonstrated very good internal consistency across a variety of samples, with alphas ranging from .86 to .95 (Spielberger et al., 1983).**

Tellegen's 34-item Absorption scale (TAS; Tellegen & Atkinson, 1974) assessed a responsiveness to engaging stimuli and an openness to become absorbed in experiences. Items such as "Sometimes thoughts and images come to me without the slightest effort on my part" and "When I listen to music I can get so caught up in it that I don't notice anything else" are answered on a dichotomous "true" or "false" rating scale and a total score is obtained by summing the number of true responses. **The TAS has demonstrated good psychometric properties with alphas ranging from .85 to .88, and a 30-day test-retest reliability of .91 (Roche & McConkey, 1990).**

## **Results**

Table 1 presents the descriptive statistics for the model variables for Study 1. As expected, trait procrastination scores were positively correlated with both absorption and state anxiety, and absorption was positively correlated with state anxiety.

The significance of the indirect effects (mediation) of procrastination on absorption through state anxiety were evaluated using the SPSS macros INDIRECT (Preacher & Hayes, 2008) which employs a bootstrapping resampling procedure that involves drawing  $k$  bootstrapped samples from the data in order to estimate the indirect effect and its confidence interval (CI). The effect size was estimated with a Kappa<sup>2</sup> statistic calculated with the SPSS macro using PROCESS (Hayes, 2013). Table 2 presents a summary of the indirect effects analysis which used 10,000 bootstrapping resamples and bias corrected 95 percent confidence intervals. In the final model there were significant direct and indirect effects of procrastination on absorption through anxiety, indicating that anxiety partially mediated this relationship. The effect size through anxiety was small but significant (Kappa<sup>2</sup> = .10). Overall, the model explained 17 percent of the variance in absorption.

To explore the alternative hypothesis that anxiety moderated the association between procrastination and absorption, a moderation analysis was conducted with the macro PROCESS (Hayes, 2013). The interaction term was non-significant,  $b = -.08$ , 95% CI [-.21, .05].

## Study 2

### Methods

#### *Participants and Procedure*

Data analyzed for Study 2 was from a larger study on procrastination and cognitive self-regulation (Sirois & Tosti, 2012). Participants were 339 undergraduate psychology students who received extra course credit for completing an online survey. Clearance from the university

research ethics board was obtained prior to recruitment. Participants registered with an online participant pool indicated their interest in completing the survey through the participant pool portal and were given access to the survey link by the researcher. Participation was voluntary and anonymous as the participant pool course credit information was not linked to the survey responses. Students indicated their consent to participate by clicking “I agree” on the online consent form and submitting their survey responses.

### *Materials*

In addition to demographic questions, the survey included the GPS (Lay, 1986), a previously validated 5-point rating version of Tellegen’s absorption scale (Jamieson, 2005) with response options ranging from 1 (*almost never*) to 5 (*almost always*), and a measure of cognitive failures. Scale properties are reported in Table 1.

The Cognitive Failures Questionnaire (CFQ; Broadbent et al., 1982) is a well-validated 25-item measure of lapses in perception, memory, and motor function. Items such as “Do you find you forget appointments?” and “Do you find you forget why you went from one part of the house to the other?” are rated on a 5-point scale ranging from 1 (very often) to 5 (never) to assess the frequency of making cognitive failures. Items are reverse scored summed to get a total score reflecting greater tendency to make cognitive failures. The CFQ has demonstrated good psychometric properties with a Cronbach alpha of .89, and 21 week test-retest reliability of .82 (Broadbent et al., 1982).

### **Results**

Similar to Study 1, the results of the correlational analyses revealed that procrastination was positively associated with absorption (See Table 1). Procrastination was also positively associated with cognitive failures, which were in turn associated with absorption.

The boot-strapped indirect effects analysis revealed a small but significant effect of procrastination on cognitive failures through absorption,  $Kappa^2 = .04$  (Table 2), with the total model explaining 30 percent of the variance in cognitive failures. However, the direct effect of procrastination on cognitive failures remained significant indicating that absorption partially mediated the effect of procrastination.

### **Discussion**

Consistent with mood-repair conceptualizations of procrastination (Sirois & Pychyl, 2013), and theory highlighting the cognitive dissociative mindsets of people high in absorption (Tellegen, 1981), the current studies demonstrate, for the first time, that trait procrastination is linked to higher levels of absorption, and that this association may have a cognitive cost. Study 1 found that the association between procrastination and absorption was due in part to higher levels of anxiety supporting the proposition that for procrastinators, becoming absorbed in pleasurable activities may be a way to escape negative mood. Study 2 focused on the potential consequences of absorption for procrastinators by testing and finding support for the role of absorption in partially explaining the link between procrastination and cognitive failures. In doing so, Study 2 also revealed a moderately strong association between procrastination and cognitive failures that has not been previously reported in the literature.

Taken together, these findings provide new insights into the factors and processes that may contribute to the self-regulation difficulties that characterize trait procrastination. Research and theory have indicated that procrastinators are susceptible to tempting and pleasurable distractions that provide a short-term means of repairing the negative mood from the anticipation of an impending aversive task (Sirois & Pychyl, 2013; Tice & Bratslavsky, 2000). However, the reasons why procrastinators may be more susceptible to becoming derailed from their intended tasks has received less attention as research has focused more on the nature of the tasks (e.g.,

Blunt & Pychyl, 2000) than on the predisposing vulnerabilities towards distraction. The current findings suggest that high levels of absorption may be one vulnerability associated with procrastination that contributes to both a sensitivity to external distracting stimuli and subsequently making a “cognitive escape” from an aversive task to become immersed in more pleasurable experiences. **This view is consistent with meta-cognitive control theories of procrastination which suggest that the procrastination is linked to the selection of maladaptive control strategies for dealing with negative mood (Spada, Hiou, & Nikcevic, 2006).** From the perspective of the cognitive escape hypothesis, the experiential and dissociative mindset of absorption may further impair the already vulnerable self-regulatory and cognitive capacities of procrastinators (e.g., Rabin et al., 2011), by contributing to lapses in mental awareness and focus that are essential for successful task completion. Further research testing role of absorption *in situ* during goal pursuit is needed to confirm these propositions.

Together with previous research, the current findings suggest that absorption may be the common vector that links procrastination to other problematic behaviors that may serve a mood regulation function such as problematic Internet use and impulse shopping (Cole & Hooley, 2013; LaVoie & Pychyl, 2001; Youn & Faber, 2000). Understanding how absorption may play a role in these and other escapist tendencies associated with procrastination is a potentially fruitful avenue of research.

Ostensibly, the current findings when combined with mood repair theories of procrastination (e.g., Sirois & Pychyl, 2013) suggest that becoming absorbed by the more pleasurable aspects of an unpleasant task may be one way to facilitate goal-directed action and reduce procrastination. Although absorption theory (Tellegen, 1981; Tellegen & Atkinson, 1974), suggests that high absorption individuals tend to have a mindset that is more experiential

than instrumental, Tellegen (1981) has noted that this does not necessarily discount the possibility of also having an instrumental mindset. However, from the lens of Kuhl's (1985) Action Control theory, state-oriented individuals, who tend to be procrastinators, report being less absorbed in their goals perhaps in part because they also view them as more frustrating and uncertain (Blunt & Pychyl, 2005). Thus, finding ways to refocus goals in a way that highlights their pleasurable and meaningful aspects may be one way to harness the potential of absorption in a way that facilitates completion of rather than escape from intended tasks.

There are several limitations and strengths of the current findings that warrant mention. Despite the significant mediation analyses, both studies used a cross-sectional design which precludes any conclusions about causality or directionality among the variables. However, the proposed links with procrastination are informed by theory (Sirois & Pychyl, 2013) and previous clinical research (Rabin et al., 2011), lending some support to the models tested. Recent research noting the genetic basis of trait procrastination (Gustavson, Miyake, Hewitt, & Friedman, 2014) also provides a reasonable argument for the temporal precedence of procrastination in the models tested (Rosenthal & Rosnow, 1991). Nonetheless, longitudinal and or experimental investigations would help provide greater support for this proposition. Testing the association of procrastination with absorption across two samples is a noteworthy strength, as is finding these results with two different forms of the absorption scale. Lastly, although use of student populations was appropriate given the high rates of procrastination in this population (Steel, 2007), future research replicating these findings with community adult samples is needed to better assess their generalizability.

Whereas previous research has noted that procrastinators may be "lost in the moment" because of their low levels of mindfulness (Sirois & Tosti, 2012), the current research suggests

that for procrastinators a tendency to become absorbed in momentary distractions may promote a cognitive escape from aversive tasks that is associated with cognitive lapses. The extent to which absorption may also create risk for other problematic behaviours, or can be harnessed to promote task engagement among procrastinators, warrants further investigation.

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Table 1.

*Descriptive Statistics for the Mediation Model Variables for Study 1 (S1) and Study 2 (S2).*

Variable	1	2	3	4
1. Procrastination	---	.16**	---	.51**
2. Absorption	.34**	---	---	.30**
3. State anxiety	.38**	.35**	---	---
4. Cognitive failures	---	---	---	---
S1 Mean	3.38	19.55	38.11	---
S1 Standard deviation	0.64	6.1	11.2	---
S1 Cronbach's alpha	.89	.82	.92	---
S2 Mean	2.68	2.58	---	3.30
S2 Standard deviation	0.55	0.72	---	0.48
S2 Cronbach's alpha	.86	.95	---	.88

*Note:* Correlations for Study 1 ( $N=103$ ) are below the diagonal and correlations Study 2 ( $N=339$ ) are above the diagonal; \* $p < .05$ , \*\* $p < .01$ .

Table 2

*Indirect Effects of Procrastination (PRO) on Absorption (ABS) Through Anxiety (ANX), Panel A, and on Cognitive Failures (CF) Through Absorption, Panel B.*

Panel	N	Path	t	Effect (SE)	BCA CIs	Model R <sup>2</sup>	F (df)
A	103	PRO – ANX (a)	4.16**			.17	13.15** (2,100)
		ANX – ABS (b)	2.58*				
		PRO – ABS (c)	3.62**				
		PRO – ANX – ABS (c')	2.45*	.10 (.04)	.03; .20		
B	339	PRO – ABS (a)	2.97**			.30	75.15** (2,336)
		ABS – CF (b)	4.78*				
		PRO – CF (c)	10.38**				
		PRO – ABS – CF (c')	10.94**	.04 (.02)	.01; .08		

*Note:* BCA CI = Bias Corrected and accelerated 95 percent confidence intervals; Boot strapping analyses was conducted with 10,000 resamples; <sup>a</sup>p = .06; \*p < .05, \*\*p < .001.