



## Experiencing the temporally extended self: Initial support for the role of affective states, vivid mental imagery, and future self-continuity in the prediction of academic procrastination☆



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### ABSTRACT

Procrastination is a self-defeating behavior that occurs when present self chooses to delay a task action in favor of future self taking on this task later. Given this dynamic between present and future self with procrastination, we hypothesized that higher levels of perceived self-continuity would be related to lower levels of self-reported procrastination, because higher self-continuity would help individuals experience future self as a direct extension of present self. Data collected from 583 undergraduate participants in three studies revealed that individual differences in perceived similarity to one's future self predicts procrastination such that participants who experienced higher future self-continuity in ten years (studies 1 and 2) and in two months (study 3) reported fewer procrastination behaviors. Furthermore, we found that high scores on Vividness of Mental Imagery and Positive Affective state scales were related to future self-continuity in ten years (study 2) and in two months (study 3). We discuss these results in relation to the theoretical importance of future self-continuity in an understanding of procrastination as well as our directions for future research.

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### 1. Introduction

When a person is faced with challenging, unfulfilling, or simply boring tasks, it can be easy to feel “stuck” and unable to move forward with a project, a relationship, or with life in general (Blunt & Pychyl, 2000; Van Eerde, 2003). This feeling is problematic because it can distract one's attention away from long-term objectives, influence the specious pursuit of short-term gains, and ultimately decrease well-being.

For example, students pursuing post-secondary education are often faced with responsibilities and deadlines that dictate when a task should be completed, no matter how dull or aversive the task may be. Of course, the long-term benefits of completing these tasks likely involve the successful completion of one's degree, the pursuit of graduate education or even the start of a fulfilling career. Paradoxically, a majority of students nevertheless report procrastinating on academic tasks (e.g., Ellis & Knaus, 1977; O'Brien, 2002), and half of undergraduates regularly engage in procrastination (e.g., Day, Mensink, & O'Sullivan, 2000).

Unfortunately, procrastination does not seem to be isolated to the academic domain such that 20% of men and women refer to themselves as being chronic procrastinators across various domains (Harriott & Ferrari, 1996). What is especially problematic about these numbers is that the tasks that are being put off involve important long-term goal pursuits such as saving for retirement (Helman, Copeland, & Vanderhei, 2011) and adopting preventative health behaviors such as exercising, eating more healthily and going for annual physical check-ups (Sirois, 2004, 2007; Stead, Shanahan, & Neufeld, 2010).

This paradoxical self-defeating delay of long-term outcomes in favor of smaller, sooner rewards has been explained as present self undermining future self by “giving in to feel good now” (Sirois & Pychyl, 2013; Tice & Bratslavsky, 2000; Tice, Bratslavsky, & Baumeister, 2001). As such, present self uses the needless delay of procrastination as a short-term emotion-focused coping strategy. Avoidance pays now for present self, but can lead to deleterious effects in terms of stress and compromised performance for future self. Ironically, of course, the self suffers, sooner or later.

Accordingly, this present-self/future-self discrepancy is the focus of our research. We seek to understand how temporal aspects of self play a role in procrastination, particularly the perceived self-continuity between present and future self. We might expect that individuals who understand that the self in the future may really suffer more because of the avoidance strategy adopted by present self would be less likely to procrastinate. In the studies that follow, we have addressed the question of

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whether higher levels of future self-continuity would be related to lower procrastination.

## 2. Conceptualizing procrastination

Procrastination represents the voluntary delay of an intended action and can be conceptualized as an avoidant coping strategy, which falls under the broader family of self-regulatory failures (e.g., Sirois & Pychyl, 2013; Tice & Bratslavsky, 2000). As opposed to conscientious individuals dispositioned to overcome short-term pursuits by adaptively regulating present behavior (i.e., delaying gratification, following norms and rules, and prioritizing tasks; John & Srivastava, 1999; Lay & Brokenshire, 1997; Lay et al., 1998; Watson, 2001), procrastinators cope with challenging, unfulfilling, or boring tasks by “giving in to feel good now” (Blunt & Pychyl, 2000; Sirois & Pychyl, 2013; Tice & Bratslavsky, 2000; Tice et al., 2001; Van Eerde, 2003). Ultimately, this delay can impair long-term well-being and health by increasing anxiety, depression (Ferrari, 1991; Lay, Edwards, Parker, & Ender, 1989), and stress (Flett, Blankstein, & Martin, 1995; Sirois, Melia-Gordon, & Pychyl, 2003; Tice & Baumeister, 1997).

Sirois and Pychyl (2013) have proposed that a disconnection between present and future self might explain why procrastinators predominantly focus on present gains while failing to anticipate their own affective reaction to future aversive tasks. In fact, research by Ersner-Hershfield, Garton, Ballard, Larking, and Knutson (2009) and Hershfield, Goldstein, Sharpe, Jesse Fox, Yeykelis, Carstensen, et al. (2011) provides some support for this focus on the discrepancy between present and future self, as Hershfield et al. found evidence that individuals who report low *future self-continuity* are more likely to engage in self-regulation failures such as saving less money for retirement.

## 3. Conceptualizing future self-continuity

Future self-continuity represents the extent to which a person feels connected and similar to his or her future self and is central to creating a fluid sense of identity through subjective time (Chandler, 1994). Experiencing a sense of self that is connected and continuous over time guides present behavior through a broader cognitive-affective scope and is beneficial for goal pursuit, decision-making, well being (Bird & Reese, 2008; Damasio, 2010; Greenwald, 1980; Sani, 2008), emotion regulation (Chandler, 1994), and coping (Sadeh & Karniol, 2012).

Although future self-continuity has many functional benefits, achieving a continuous sense of self may not come naturally to some, as multiple selves can be experienced throughout a lifetime. In fact, present self's affinity to past or future selves is contingent on the time that has passed between each self (Parfit, 1971, 1987) and can greatly influence how connected and similar one feels to a future self that is perceived as distant in time.

Neuroscience research also supports the central role of the conception of self temporally by illustrating that certain areas of the brain activate differently for future self than for present self. For example, in a study by Ersner-Hershfield et al. (2009), participants low on future self-continuity showed similar neural activations when they imagined their future self as when they imagined a stranger, and these were different neural activations than for present self. Consequently, feeling disconnected and different from future self has been linked to purely present-focused decision-making such that individuals who lack “personal sameness across time” (James, 1895, originally published in 1892) are likely to make more unethical decisions (Hershfield, Cohen, & Thompson, 2011) and discount larger benefits for future self by accepting immediate rewards of less value (Bartels & Urminsky, 2011).

## 4. Procrastination and the temporally extended self

There is limited research exploring the role of future self-continuity with regards to procrastination, but what findings demonstrate so far is

that procrastinators almost exclusively adopt a present-focused perspective and rarely project themselves into the future (Ferrari & Diaz-Morales, 2007; Specter & Ferrari, 2000). Since future self-continuity is important for guiding appropriate emotional responses and daily goal-oriented behaviors (Chandler, 1994; Damasio, 2010; Greenwald, 1980), it follows that procrastination might be explained in part by a fragmented relationship between a person's present and future self like it is for other self-regulation failures, such as saving for retirement. If future self-continuity can be used for adaptive temporal decision-making, the question then remains: how can the self achieve continuity?

Since future self can only be accessed through one's imagination, then a reduced or heightened ability to mentally create and manipulate vivid mental images may help explain why certain individuals feel more or less connected with that self (e.g., Ellis, 1995; Neisser, 1988; Parfit, 1971). Furthermore, individuals who experience greater positive affective states may be more likely to include the patterning of future self's goals, affect, and thoughts into present awareness, as these positive states have been found to favor mental flexibility and cognitive broadening (Fredrickson, 2001; Fredrickson & Joiner, 2002). Taken together, vivid mental images and positive affective states can represent an adaptive psychological tool for long-term decision making by allowing a person to regulate behavior within a broader cognitive-affective scope.

An important body of research has investigated how mentally traveling into the past or the future can influence impulsive decision-making, mostly in terms of temporal discounting (e.g., Ainslie, 2001; Green & Myerson, 2004; Loewenstein, Read, & Baumeister, 2003) and episodic memory (e.g., Suddendorf & Corballis, 2007). However, this research has mostly focused on a person's goal-oriented and cognitive relationship to *situations* and *events*. As such, the present research adds a novel contribution to the literature by furthering the understanding of how self-regulation failures such as procrastination operate in relation to the temporally extended self. As an exploratory goal, the present research also investigates how affect and certain imaginative processes, more specifically vivid mental imagery, may sustain and enhance the connection between present and future self.

To investigate the role of self-continuity in relation to procrastination, we conducted three studies with a similar design. In each case, participants were asked to imagine their future self in ten years (studies 1 and 2) and in two months (study 3). Participants were also asked to answer self-report items related to their procrastination behavior. Correspondingly, we extended the hypothesis that participants who reported higher future self-continuity in ten years and at the end of the semester would procrastinate less. As an exploratory goal founded on the idea that future self-discontinuities may be due to a failure of the imagination (Parfit, 1971), studies 2 and 3 included self-report questions about affective states and vividness of mental imagery. In these studies, we expected participants who reported highly vivid mental images and more positive affective states to also report higher future self-continuity in ten years (study 2) and at the end of the semester (study 3).

## 5. Study 1

In the first study, we examined the relation of future-self-continuity and procrastination. We hypothesized that *future self-continuity would negatively predict procrastination such that individuals with high future self-continuity would report less procrastination than individuals with low future self-continuity (Hypothesis 1).*

### 5.1. Method

#### 5.1.1. Participants

The sample included 86 students (67.4% females, 32.6% males) who were aged between 18 and 42 years old ( $M = 22.46$ ,  $SD = 4.98$ ). Participants were mainly enrolled full-time (77.9%) in their first (17.4%),

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