

## Patterns of Procrastination, Motivation, and Strategy Use across Class Contexts and Students' Abilities

Jianan Wang<sup>1</sup>, Rayne A. Sperling<sup>2</sup>, & Paul Haspel<sup>3</sup>

### Abstract

The current study extended understanding of students' procrastination tendencies through focus on the roles of varied class formats and student abilities. University participants enrolled in honors, online, and classroom-based writing courses completed established measures of procrastination, active procrastination, self-regulated learning, and self-handicapping tendencies. Students' GPA and writing performance were also included as outcome measures. Findings indicated no significant differences in self-reported procrastination across class settings. Relations between reported active procrastination and self-regulated learning constructs were, however, significant and in the expected direction for self-efficacy, text anxiety, and effort regulation. Significant negative relations between active procrastination and the rehearsal and organization subscales of the Motivated Strategies for Learning Questionnaire (MSLQ) were indicated. As hypothesized, reported active procrastination was not correlated with self-handicapping but yielded a surprising negative correlation with overall procrastination. Also, as expected, active procrastination was positively related to GPA and writing performance scores. Consistent with expectations but not previously tested, honors students reported higher active procrastination tendencies. Additional findings and recommendations for future research and implications for practice are considered.

**Keywords:** academic procrastination, active procrastination, self-handicapping, self-regulated learning

### Introduction

Many acknowledge procrastination as a troubling habit that impedes their personal success. Researchers from a variety of disciplines recognize procrastination as a critical construct. Previous studies indicate that in academic settings, students of all grade levels report engaging in procrastination on various academic tasks, and nearly half report chronic and problematic procrastination (Solomon & Rothblum, 1984a; Steel, 2007). Among existing research studies, some scholars targeted the undesirable consequences of procrastination such as stress, guilt, or uncompleted tasks (Anderson, 2003; Onwuegbuzie, 2004; Solomon & Rothblum, 1984a), while others focused on discrepancies between individuals' intentions and actions toward task completion (Steel, 2007; van Eerde, 2003).

Procrastination is generally regarded as a failure in self-regulation (Ferrari, 2001; Grunschel, Patrzek, & Fries, 2013; Park & Sperling, 2012; van Eerde, 2003). Procrastinators display ineffective time and behavior management, which often results in counterproductive behaviors such as avoidance in starting or completing tasks, poor goals, or decisions (Howell & Watson, 2007; Steel, 2007; Wolters, 2003). Individuals may also engage in procrastination as a self-handicapping strategy in order to protect themselves from the consequences of expected failure (Ferrari & Tice, 2000; Klassen, Krawchuk, & Rajani, 2008).

<sup>1</sup>Department of Educational Psychology, Counseling, and Special Education, The Pennsylvania State University.

<sup>2</sup>Department of Educational Psychology, Counseling, and Special Education, The Pennsylvania State University.

<sup>3</sup>Department of Humanities, Central Carolina Community College. The Pennsylvania State University.

However, in contrast to the dominant view of procrastination as a maladaptive and unnecessary delay or as a coping mechanism, some researchers took a different approach and suggested that procrastination could entail adaptive functions (Schraw, Wadkins, & Olafson, 2007). Potential reported adaptive functions include that procrastination can arouse motivation, help students to achieve efficiency, or can provide students a thrill experience as a deadline nears. Further, research reports that some students may deliberately choose to procrastinate (Cao, 2012a; 2012b; Chu & Choi, 2005; Schraw et al., 2007; Seo, 2012).

Although many do not conceptualize intentional delay as procrastination (Corkin, Yu, & Lindt, 2011; Steel, 2010; Anderson, 2003), other researchers believe that purposeful delay should also be included in the nomological network of procrastination (Cao, 2012b; Chu & Choi, 2005; Ferrari, 1992; Schraw, et al, 2007). In accord with this view, active procrastination was proposed as an independent construct (Chu & Choi, 2005). Active procrastination, then, refers to the deliberate postponement of actions for utilitarian purpose, such as arousing incentive to achieve optimum performance, increasing challenge for less motivating tasks, or enhancing effectiveness through increased task focus.

While this perception of procrastination may be empirically possible, the idea of active procrastination is not without debate on both theoretical and definitional characteristics. Researchers who challenge the expanded view of procrastination claim that purposeful delay should not be regarded as procrastination because in addition to delay in action, procrastination also encompasses failure to regulate one's cognition and behavior. This contradicts how active procrastination was proposed (Corkin et al., 2011; Steel, 2010). Active procrastinators still engage in dilatory behaviors, however their underlying motivation for postponing tasks is likely induced by their preference for optimum pressure or sensation seeking and as such may demonstrate effective self-regulation (Chu & Choi, 2005; Seo, 2012).

People might believe that high achieving students are less likely to procrastinate. However, research findings are not always consistent with this view (Ferrari, 1992; Solomon & Rothblum, 1984b). Cao (2012a) proposed that students with high academic achievement are also likely to chronically engage in procrastination behaviors, and when they do, they tend to procrastinate in a purposive, or active, manner. However, little research has been conducted to investigate high-achieving students' active procrastination. Given the context of academic writing tasks, the current study further explored relations among active procrastination, self-regulated learning, and academic achievement. Specifically, this study examined the relationship between reported active procrastination and five other constructs including traditional procrastination, self-handicapping tendencies, learning motivation, cognitive and metacognitive learning strategies, task performance, and academic achievement in varied class contexts and with students of varied academic abilities.

It may be because of the absence of a holistic model of procrastination that findings from procrastination studies are often inconsistent (Onwuegbuzie, 2004; Steel, 2007). To address this inconsistency, the current study aimed to explore the nature of procrastination, especially possible utilitarian functions of procrastination. In this work, academic procrastination is examined in two separate forms, one defined as *active procrastination* (Chu & Choi, 2005) that represents a less debilitating and perhaps more regulatory pattern, while the other is specified as *passive procrastination*, which is in accord with views that procrastination is characterized by irrational, counterproductive delay (Schraw et al., 2007; Steel, 2007).

## **Theoretical background**

Empirical studies on procrastination have employed various theories to examine the construct. For instance, procrastination has been studied under the framework of temporal motivational theory (TMT; e.g. Steel, 2007), goal theory (e.g. Wolters, Yu & Prinrich, 1996), self-efficacy theory (e.g. Klassen et al., 2008), future time perspective (e.g. Bembunty & Karabenick, 2004), hope theory (e.g. Alexander & Onwuegbuzie, 2007), and self-regulation theories (e.g., Wolters, 2003). Self-regulation, defined as an ability to exert control over thoughts, emotions, impulses, and task performance oriented to the attainment of personal goals (Prinrich, 2000; Zimmerman, 2008), is found to be closely related to students' procrastination tendencies (Park & Sperling, 2012; van Eerde, 2003; Wolters, 2003). Therefore, in this study we adopted the self-regulated learning framework to ground our perspectives on the behavioral, cognitive, and affective characteristics of procrastinators.

### Characteristics of passive procrastinators

Behaviorally, passive procrastinators have trouble keeping up with plans and have weak time management abilities (Bembenutty & Karabenick, 2004; Lay & Schouwenburg, 1993; Wolters, 2003). The impact of time, particularly deadlines, affects behavioral direction. For example, failure in time management directly leads to deficiencies in organization, which impedes passive procrastinators from using effective strategies. Such strategies, commonly implemented by self-regulators, such as proximal goal setting to shorten delays, are effective to increase working efficiency (Steel, 2007). Studies reported that passive procrastinators were deficient in organization abilities, such as setting goals, prioritizing tasks, or managing time in a disciplined way (Howell & Watson, 2007; Schouwenburg, 2004). Passive procrastinators also have difficulty following their original work plans and often fail to consider long-term responsibilities and instead pursue immediately gratifying activities (Steel, 2007). As a consequence, they are susceptible to distractions and often fail to act upon intended actions. In particular, Lay and Schouwenburg (1993) examined intention—behavior discrepancies and behavior postponement in academic settings and discovered that procrastinators reported engaging in more non-task-related behaviors during planned times.

Passive procrastinators also differ from self-regulated individuals in regulating their cognition. Self-regulated learners possess skills that enable them to plan, monitor, and evaluate their learning progress, and demonstrate higher metacognitive awareness, which helps them select and perform appropriate cognitive strategies (Pintrich, 2000). In contrast, passive procrastinators know fewer, or fail to adopt effective cognitive and metacognitive strategies when completing academic tasks (Klassen, et al., 2008; Wolters, 2003). As a consequence, their work becomes effortful and time-consuming. A study that examined the effects of cognitive load on working under time limits, for example, reported that students who frequently procrastinated had trouble regulating themselves and performed poorly under high cognitive demands (Ferrari, 2001).

In addition to behavior and cognitive deficiencies, passive procrastinators are also more inclined to show maladaptive motivational beliefs and attitudes. The most prominent factor is represented by perceived self-efficacy, a person's confidence in their capabilities of performing a task well (Zimmerman, 2000). Wolters (2003) reported that students with less confidence in their academic ability reported higher frequencies of putting off tasks than students with higher self-efficacy. Moreover, passive procrastinators not only displayed lower self-efficacy in general academic abilities, but also demonstrated insufficient efficacy in successfully regulating themselves (Klassen, et al., 2008; Klassen, et al., 2010).

In relation to motivational goal theories (Ames, 1992), studies report that individuals may procrastinate more under conditions that foster either mastery-avoidance orientation or performance-avoidance orientation (Elliot, 1999; Howell & Watson, 2007; Pintrich, 2000). For example, Howell & Watson's study (2007) of undergraduates indicated procrastination was correlated negatively with mastery-approach orientation and positively with mastery-avoidance orientation. They further suggested that achievement goal orientation negatively predicted procrastination behavior. Overall, passive procrastinators seem to display maladaptive motivational beliefs, such as lower self-efficacy and avoidance and external goal orientations, supporting that they lack skills in regulating motivation. As passive procrastinators are unable to follow plans, adopt ineffective strategies, and accommodate maladaptive beliefs, they avoid acting upon a task because of the projected consequences. Procrastination, therefore, is also seen as a typical representation of self-handicapping (Alexander & Onwuegbuzie, 2007; Ferrari, 1991; Schouwenburg, 1992). Generally regarded as dysfunctional self-regulation, self-handicapping is an emotion-oriented defensive strategy that an individual uses to protect self-worthiness by establishing obstacles to impede success as excuses for inability (Martin, Marsh & Debus, 2001). Ferrari and Tice (2000) reported that procrastinators tend to delay on tasks that may reveal low ability and found that procrastination behavior occurs more often when individuals are under evaluation conditions. Other researchers shared similar associations between procrastination and fear of failure (Alexander & Onwuegbuzie, 2007; Grunschuet al., 2013; Schouwenburg, 1992).

Academic procrastination is generally assumed to be unfavorable behavior because of the negative psychological outcomes (e.g., stress and anxiety) and performance outcomes (e.g., lower work quality, late assignments, lower scores) (Ferrari, 1992; Ferrari, 2000; Rothblum, Solomon, & Murakami, 1986). Of importance, however, other research findings indicated a different pattern.

Some researchers reported minimum relationships between grades and procrastination tendencies (Hill, Hill, Chabot & Barrall, 1978; Howell & Watson, 2007). Additionally, correlations between negative psychological outcomes, such as reported anxiety or self-handicapping related dispositions, are often weak (Chu & Choi, 2005; Howell & Watson, 2007; Lay & Schouwenburg, 1993). These disparate findings indicate continued need for more clarity and a deeper understanding regarding the influences of procrastination on academic achievement. Recently, researchers began to examine procrastination from an alternative perspective and suggested that not all procrastination patterns lead to harmful consequences (Cao, 2012b; Chu & Choi, 2005; Seo, 2012; Schraw et al., 2007; Steel, 2007). In contrast to previous perceptions, participants in these studies described procrastination as an adaptive strategy employed to induce short-term benefits. In Schraw, Wadkins, and Olafson's study (2007), for example, students reported that they procrastinated for adaptive reasons and received benefit from procrastination. Virtually all respondents in their study indicated achieving efficiency as a result of procrastination. This finding challenges the dominant view of procrastination as a self-regulatory failure or a self-handicapping mechanism.

Chu and Choi (2005) categorized those who intentionally delay as active procrastinators in contrast to passive procrastinators. The notion of active procrastination indicates desirable motivational and behavioral characteristics rather than negative consequences. This type of procrastination is purposeful, planned, and a regulatory strategy. Chu, Choi and Moran, suggested that active procrastinators differ from passive procrastinators in the three motivational self-regulatory aspects (Chu & Choi, 2005; Choi & Moran, 2009). Behaviorally, rather than failing to complete the task, active procrastinators are able to finish the task by the deadline and further, they do not believe that working ahead of time would result in better product quality. Cognitively, active procrastinators are able to act on their decision by choosing to put off the task in order to maximize resources to complete the task. Affectively, they feel little discomfort and rather become more motivated when working under pressure. Studies discovered that active procrastinators who are skilled at self-regulating, reported anxiety and self-efficacy similar to non-procrastinators (Chu & Choi, 2005).

However, researchers cast doubt on students' endorsed beliefs such as "working best under pressure" (Ferrari, 2001; Tuckman, 2002). In particular, Tuckman (2002) claimed that the emotional coping aspect of procrastination (e.g. avoiding unpleasant tasks) allows students to view procrastination in a favorable manner and downplay the actual reasons for their procrastination. He further provided direct evidence that procrastinators make justifications, or rationalizations, for their behavior. Evidence from Park and Sperling's (2012) study supported the speculation that active procrastinators' intention and claimed purpose might not be truly reflected by their actual procrastination tendencies.

One important question regarding active procrastination is whether procrastination can be used as an adaptive strategy that does not result in inferior performance. A possible explanation for the discrepancies in the existing literature is that most procrastination measures are limited in measuring the potential adaptive aspects of procrastination (Schraw et al., 2007; Steel, 2007). That is, procrastination scales were found to be a restrained measure of motivated delays. However, the procrastination construct may include broader dimensions in behavioral, cognitive, and affective aspects than how procrastination has been traditionally defined (Corkin et al., 2011). Research on active procrastination construct is scarce. Aside from Chu, Choi, and Moran's initial work, there are inconsistent findings regarding whether active procrastination is a valid and independent construct (Cao, 2012b; Seo, 2012).

Most existing research employed self-report instruments to delineate procrastination tendencies and some also targeted achievement variables. While high achieving individuals are expected to be better self-regulators, for example, Ferrari (1991) found that students of greater ability reported more procrastination behavior than low ability students and procrastination also tended to increase with advancement in academic careers. High-achieving individuals, therefore, also likely engage in procrastination behaviors, and arguably, they may be more likely to actively procrastinate. High achievers are more likely to have the skills to combat the ill effects of procrastination and are more likely to seek the thrill experience of beating deadlines. Some research supports this position and findings suggested that capable students are aware of their high cognitive ability "to perform the bulk of their course work at the last minute and still do reasonably well" (Ferrari, Johnson, & McCown, 1995; p.41). Other related research indicated that graduate students tended to report more procrastination behaviors than did undergraduate students (Azure, 2011; Onwuegbuzie, 2004).

## Purpose of the study

The current study contributes to the procrastination literature with direct evidence regarding the relationship between students' achievement and active procrastination. In response to Cao's suggestion that future research should compare "procrastinators who are successful in managing their learning process and achieving superior academic performances" (2012a; p. 57), with unsuccessful procrastinators and non-procrastinators, we examined students of varied ability. To maximize the potential for procrastination, we targeted writing tasks. Previous research supported that procrastination behaviors tend to happen in contexts where tasks are demanding and evaluation-based, unappealing, or when rewards are distant (Howell & Waston, 2007). Consistent with an intentional delay perspective, for some students the choice to postpone a task, such as writing, may be a strategic decision made to achieve an optimal level of pressure in order to diminish boringness, increase challenge, or for the gain of immediate merit. This would indicate that some aspects of procrastination might be consistent with strategic facets of effective self-regulated learning (Corkin et al., 2011). Further, previous studies indicated that writing is an area where students procrastinate most (Beswick, Rothblum & Mann, 1988; Onwuegbuzie & Collins, 2001).

In summary, the purpose for the current study was to contribute to the scholarly discussion regarding active procrastination (Cao, 2012b; Chu & Choi, 2005; Schraw et al., 2007; Steel, 2007; Wolters, 2003) through examination of whether active procrastination patterns demonstrated positive aspects that incorporate elements of self-regulated learning (Pintrich, 2000; Zimmerman, 2008). Specifically, through the comparison between high and less achieving individuals, this study further examined the nature of active procrastination and addressed four primary research questions.

First, *Are there differences in students' procrastination tendencies across different class settings?* The context of the study allowed us to examine procrastination patterns of students enrolled in different writing classes that included traditional, honors, and online sections. We anticipated differences in procrastination tendencies across these settings. For example, we anticipated that students enrolled in classes without in-person contact with their instructor may be more prone to procrastinate.

Second, *Are there relationships among self-regulated learning constructs and active procrastination?* We anticipated that active procrastination was inversely associated with traditional procrastination, self-handicapping, and maladaptive motivational beliefs such as test anxiety and avoidance-goal orientations. However, active procrastination was assumed to have a positive relationship with adaptive self-regulatory facets such as intrinsic goal orientation, task value, and self-efficacy. In addition, active procrastination was expected to correlate with reported learning strategies, especially time and study management.

Third, we questioned, *Can active procrastination be distinguished from passive procrastination?* If active procrastination is a tenable and independent construct as suggested by Chu and Choi (2005), the construct should be distinguishable from traditional procrastination, which is regarded as maladaptive and irrational. It was expected that motivational and cognitive ratings of active procrastinators would be similar to those reporting low procrastination.

Our last question asked, *Do students with better academic performance actively procrastinate more than other types of students?* Previous research reported that students who procrastinate are not necessarily low-achievers and that students might procrastinate more as they become more self-regulated individuals (Ferrari et al., 1995). It was expected that students with higher academic performance would report higher active procrastination.

## Method

### Participants

Fifty-four volunteer undergraduate students (23 Male) from a large Mid-Atlantic university participated for extra course credit. Participants were enrolled in sections of writing courses taught by the same instructor (two honors sections,  $n=21$ ; two classroom-based sections,  $n=17$ ; one online-based section,  $n=16$ ). The sample included two Asian Americans, four African Americans and four Hispanics. Participants reported enrollment in diversified majors, including Psychology, History, Sociology, Engineering, and Biomedical Science.

## Measures

**Motivated Strategies for Learning Questionnaire (MSLQ).** The 81-item Motivated Strategies for Learning Questionnaire (MSLQ; Pintrich, 1991) assessed students' motivation orientation and use of learning strategies. Students rated each item on a scale ranging from 1 (not at all true of me) to 7 (very true of me). The motivation section of the MSLQ includes 31 items divided into six subsections including intrinsic goal orientation, extrinsic goal orientation, task value, control of learning beliefs, self-efficacy for learning and performance, and test anxiety. A sample item is, "If I can, I want to get better grades in this class than most of the other students." Cronbach's alpha for each subscale is reported to range from .62 to .93 (Pintrich, Smith, Garcia, & Mckeachie, 1993). The learning strategy section examines students' cognitive strategies, metacognitive strategies, and resource management. The cognitive strategy subsection evaluates students' use of rehearsal, elaboration, organization, and critical thinking strategies. An example item is, "I try to relate ideas in this subject to those in other courses whenever possible." The metacognitive strategy subsection assesses students' planning, monitoring, and regulation of their cognitive learning processes. A sample item includes, "I often find that I have been reading for this class but don't know what it was all about." The resource management strategy subsection examines students' behavioral self-regulation strategies including time and study management, effort management, peer learning, and help seeking. A sample item is, "When studying for this course, I often set aside time to discuss course material with a group of students from the class." Internal consistencies of individual subscales of the learning strategies section reportedly range from .52 to .80 (Pintrich et al., 1993).

**Procrastination Assessment Scale-Students (PASS).** The Procrastination Assessment Scale-Students (PASS; Solomon & Rothblum, 1994) was administered to assess students' procrastination tendency. Solomon and Rothblum reported a .80 test-retest correlation of the overall scale. The 44-item instrument contains two sections analyzed separately. The first section (18 items) was used in this study and measures the prevalence of procrastination across six academic domains: writing a term paper, studying for examinations, keeping up with weekly reading assignments, performing administrative tasks, attending meetings, and performing school activities in general. Respondents indicated their tendency to procrastinate on a scale ranging from 1 (never procrastinate) to 5 (always procrastinate). Each question is also followed by rating whether procrastination in that area is a problem for them ranging from 1 (not at all a problem) to 5 (always a problem) and whether the respondent wants to decrease their procrastination tendency in that area ranging from 1 (do not want to decrease) to 5 (definitely want to decrease). The first two items are summed, and the third item is assessed separately across the six domains. Higher scores indicate greater procrastination behavior.

**Active Procrastination Scale (APS).** The 16-item Active Procrastination Scale (APS; Choi & Moran, 2009) was administered to assess four defining characteristics of active procrastination including outcome satisfaction (four items,  $\alpha = .89$ ), preference for pressure (four items,  $\alpha = .93$ ), intentional decision (four items,  $\alpha = .85$ ) and ability to meet deadlines (four items,  $\alpha = .85$ ). Except for items from the subscale "intentional decision", items were reverse coded. Sample items include "I'm frustrated when I have to rush to meet deadlines." and "I intentionally put off work to maximize my motivation." Students rated statements on a scale ranging from 1 (strongly disagree) to 7 (strongly agree). Higher scores signify active procrastination. Choi and Moran (2009) reported Cronbach's alpha for the four dimensions ranged from .70 to .83, and for the full scale was .80. They further reported that the APS scale measures a distinct form of procrastination (with a correlation to PASS  $r = .07$ ) and reported significant relations between APS and personality traits, measures of time use, and self-perceptions (Choi & Moran, 2009).

**Self-Handicapping Scale (SHS).** The Self-Handicapping Scale (SHS; Jones & Rhodewalt, 1992) was also administered. The SHS compares 25 self-reported descriptive motivational statements formatted on a 6-point scale ranging from 1 (disagree very much) to 6 (agree very much). An example item is, "Usually, when I get anxious about doing well, I end up doing better." Possible scores on the SHS scale ranged from 0 to 125, with higher scores indicating greater reported self-handicapping tendency. Jones and Rhodewalt reported internal consistency of .79 and test-retest reliability of .74.

**Achievement.** Achievement measures included students' cumulative GPA and their paper assignment grade.

## Procedure

After the consent procedure, participants were directed to an online survey (i.e. Qualtrics) through a provided link. The survey began with demographic information, academic status, and GPA, followed by the self-report scales, which were counter-balanced.

## Results

Descriptive statistics address the first question regarding if there were differences in procrastination tendencies across class settings. As Table 1 presents, the classroom-based sections reported the highest PASS score among the three settings, whereas the honors sections reported the highest APS score. There were no differences on reported academic procrastination tendencies  $t(30) = 1.44, p = .16$ , and active procrastination  $t(30) = .036, p = .972$ , for the classroom-based sections and the online-based section. Yet, as expected, the honors sections students reported significantly higher scores on the active procrastination scale than classroom-based students  $t(35) = 2.29, p = .028$ , but the two classes lacked differences on passive procrastination as indicated by the PASS score.

The second question addressed how active procrastination relates to students' motivational and regulatory processes. Table 2 reports correlations between self-regulated constructs, reported passive procrastination, and self-handicapping and active procrastination. In accordance with predictions, scores on the APS were negatively correlated with those on the MSLQ test anxiety scale ( $r = -.31, p < .05$ ), and not correlated with self-handicapping. Also as predicted, active procrastination was positively correlated with self-efficacy ( $r = .38, p < .001$ ). Specifically, self-efficacy was found to be positively correlated with three subsections of the APS scale: outcome satisfaction ( $r = .31, p < .05$ ), preference of pressure ( $r = .34, p < .05$ ), and ability to meet deadlines ( $r = .34, p < .05$ ).

Contrary to expectations, intrinsic goal and task value scores yielded non-significant correlations with APS scores. Additionally, among all the learning strategy subscales of the MSLQ, active procrastination was found to be inversely correlated with rehearsal ( $r = -.34, p < .05$ ) and organization ( $r = -.45, p < .001$ ). No significant correlation between the APS scores and the MSLQ time and study management subscale was indicated. Although the APS scores did not significantly correlate with the SHS scores overall, the intentional decisions subsection ( $r = .36, p < .001$ ) and ability to meet deadlines subsection ( $r = -.34, p < .05$ ) were both negatively correlated with SHS scores.

In order to address the third research question about differences in active procrastinators', non-procrastinators', and passive procrastinators' cognition and behavior, an established two-step process was used to categorize the participants into the three procrastinator-groups (Choi & Moran, 2009). First, participants who scored less than the median score ( $Mdn = 2.50$ ) on the PASS were categorized as non-procrastinators ( $n = 26$ ), whereas those who scored higher than or equal to the median were categorized as procrastinators ( $n = 27$ ). Second, among the procrastinators, active procrastinators ( $n = 14$ ) were further separated from passive procrastinators ( $n = 13$ ) using the reported APS score. Although Chu and Choi (2005) acknowledged that median split was an arbitrary method to separate the procrastination sub-groups, this study purposefully followed the procedure to examine the consistency of their findings with the current sample.

**Table 1: Comparative Means and Standard Deviations on Variables across Class Settings**

Measures	Class settings		
	Honors (n = 21)	Classroom-based (n = 17)	Online-based (n = 16)
GPA	3.74 (.29)	3.16 (.47)	3.36 (.50)
Paper Score	94.10 (1.90)	89.00 (6.80)	86.00 (5.25)
MSLQ			
Intrinsic Goal	4.51 (1.25)	4.71 (0.90)	5.13 (0.94)
Extrinsic Goal	5.93 (0.69)	5.63 (0.72)	5.36 (1.05)
Task Value	4.78 (1.23)	5.07 (0.78)	5.35 (1.25)
Control of Learning Beliefs	6.01 (0.75)	5.10 (0.86)	5.92 (.39)
Self-Efficacy	6.26 (0.56)	5.73 (0.95)	5.76 (.85)
Test Anxiety	4.15 (1.68)	3.73 (1.41)	4.20 (1.35)
Rehearsal	2.40 (1.29)	3.90 (1.20)	3.69 (1.21)
Elaboration	4.08 (1.27)	4.52 (1.34)	5.13 (1.17)
Organization	2.86 (1.30)	3.69 (1.00)	4.38 (1.40)
Critical Thinking	4.30 (1.39)	3.93 (1.22)	4.36 (1.04)
Metacog. Self-regulation	3.94 (1.04)	4.16 (1.03)	4.66 (0.97)
Time and Study Management	4.82 (1.12)	4.53 (0.79)	5.32 (0.91)
Effort Regulation	5.60 (0.79)	5.09 (1.08)	5.52 (1.19)
Peer Learning	2.22 (1.08)	3.02 (1.14)	2.58 (1.09)
Help Seeking	3.58 (1.29)	3.87 (1.14)	2.64 (1.12)
PASS	2.40 (0.14)	2.59 (0.12)	2.36 (1.10)
SHS	3.17 (0.14)	2.99 (0.12)	3.12 (0.18)
APS	4.76 (.20)	4.08 (.22)	4.07 (.25)

**Table 2: Correlation with APS, Descriptive Statistics, and Reliability Coefficients of Scales**

Variable	<i>r</i>	<i>M</i>	<i>SD</i>	<i>α</i>
MSLQ (81)				
Intrinsic Goal (4)	-.06	4.75	1.07	.77
Extrinsic Goal (4)	.11	5.67	0.84	.49
Task Value (6)	.02	5.04	1.12	.89
Control of Learning Beliefs (4)	.20	5.7	0.80	.57
Self-Efficacy (8)	.38**	5.94	0.81	.89
Test Anxiety (5)	-.31*	4.03	1.49	.85
Rehearsal (4)	-.34*	3.25	1.40	.76
Elaboration (6)	-.23	4.53	1.31	.81
Organization (4)	-.45**	3.57	1.38	.78
Critical Thinking (5)	-.11	4.2	1.23	.77
Metacog. Self-regulation (12)	-.19	4.22	1.04	.82
Time and Study Management (8)	.05	4.88	1.00	.69
Effort Management (4)	.32*	5.42	1.02	.58
Peer Learning (3)	-.23	2.58	1.13	.54
Help-seeking (4)	-.18	3.39	1.28	.57
PASS (44)	-.36**	2.45	0.53	.87
SHS (25)	-.12	3.1	0.61	.74
APS (16)	-	4.34	0.97	.83

*Note.* *N* = 54; The number in the parenthesis indicates the number of items in the subscales.

\**p* < .05. \*\**p* < .001

Table 3 presents means, standard deviations, and results of one-way ANOVA analyses. In accordance with expectations, results showed that the three groups differed significantly on self-handicapping tendency,  $F(2, 50)=4.27$ ,  $p=.019$ . Results also indicated group differences on the MSLQ learning strategy subscale,  $F(2, 50)=3.74$ ,  $p=.031$ , in particular on subsections including elaboration,  $F(2,50)=3.18$ ,  $p=.05$ , metacognition of self-regulation,  $F(2,50)=4.47$ ,  $p=.016$ , and cognitive strategies,  $F(2,50)=3.49$ ,  $p=.038$ . No significant differences among groups were found on the motivation subscale in general, but the three groups differed significantly on the control of learning beliefs subsection,  $F(2,50)=3.34$ ,  $p=.044$ .

Post-hoc comparisons using the 2-sided Dunnett method were then conducted to test between-group differences on the scores on the motivation subscale, the learning strategy subscale, and the SHS. Using the active procrastinator group as the reference, the non-procrastinator group reported higher learning strategies ( $M=.64$ ,  $SD=.24$ ,  $p=.017$ ) and less self-handicapping tendencies ( $M=-.51$ ,  $SD=.19$ ,  $p=.018$ ). The passive group and the active group did not show statistical differences. The last research question addressed whether high achieving individuals would report more active procrastination. Prior to cross-group analysis, correlational analyses were conducted. As expected, students' achievement level, as indicated by their cumulative GPA ( $r = .44$ ,  $p < .001$ ) and their paper score ( $r = .46$ ,  $p < .001$ ), both showed significant positive correlations to APS scores.

ANOVA then tested procrastination differences among the original class settings. Statistically significant differences supported that students in the honors class reported higher active procrastination tendencies than the other class sections,  $F(2, 50) = 3.47$ ,  $p = .04$ . All students were then further divided into high-less performance groups by the median score ( $Mdn=93$ ) on their paper assignment and an independent  $t$ -test was applied to examine between group differences. Students who scored above the median were categorized into the high performance group. Results in Table 4 supported that students with high academic performance demonstrated more active procrastination behavior,  $t(52)= 2.52$ ,  $p = .02$ . No differences were found for the motivational and the learning strategy subscales of MSLQ between the two groups.

**Table 3: ANOVA Results of Major Scales by Procrastination Patterns**

Scales	Procrastination patterns			F (2, 50)	p	$\eta^2$
	None (n = 26)	Passive (n = 13)	Active (n = 14)			
MSLQ						
Motivation	5.37 (.46)	5.15 (.56)	5.11 (.58)	1.41	.25	.05
Learning Strategies	4.25 (.78)	4.09 (.65)	3.61 (.63)	3.74	.03*	.13
SHS	2.87 (.62)	3.26 (.34)	3.39 (.66)	4.27	.02*	.15

*Note.* A two-step method was employed to define procrastinators (Choi & Moran, 2009). First, procrastinators were separated from non-procrastinators by their reported PASS score ( $Mdn \geq 2.50$ ); Second, active procrastinators are further separated from passive procrastinators from the procrastinator group by the reported APS score ( $Mdn \geq 4.06$ ).

**Table 4: Pairwise Comparison of Major Scales by Performance Levels**

Scales	Performance level		t (52)	p	Cohen's d
	High (n = 30)	Less (n = 24)			
MSLQ					
Motivation	5.30 (.48)	5.15 (.56)	1.07	.29	.29
Learning Strategies	3.97 (.78)	4.04 (.81)	-.32	.75	-.09
SHS	3.07 (.68)	3.14 (.52)	-.42	.68	-.12
PASS	2.37 (.56)	2.55 (.46)	-1.29	.2	-.36
APS	4.63 (.85)	3.98 (1.01)	2.52	.02*	.69

*Note.* High-performers paper score  $\geq 93$ ; Less-performers paper score  $< 93$ ;  
\* $p < .05$ .

## Discussion

In this study we employed a self-regulated learning theoretical framework (e.g., Pintrich, 2000; Zimmerman, 2008) to examine procrastination tendencies across class formats, with students of varied previous achievement, while engaged in university writing classes. One intention was to further explore potential positive patterns of procrastination behavior (Chu & Choi, 2005; Choi & Moran, 2009). Motivation, learning strategies, self-handicapping tendencies, and performance of active procrastinators in comparison with passive procrastinators and non-procrastinators were reported. We proposed that among students who often demonstrate procrastinating behavior, active procrastination is more likely to be found among high-achieving individuals, and targeted writing tasks as our context of examination.

Little is known regarding how procrastination tendencies that students employ may vary across different class settings. While one might suspect that students enrolled in online classes may procrastinate more given the lack of face-to-face interaction (i.e. social pressure) with the teacher and other students, results in this study indicated no significant differences in procrastination across class formats. Such findings are consistent with a view of procrastination as a trait-like quality (Lay & Schouwenburg, 1993).

Regarding the potential of an adaptive, active procrastination construct, findings from previous research were partially supported. Aligned with other studies that claimed procrastination is not always maladaptive (e.g., Chu & Choi, 2005; Schraw et al., 2007; Seo, 2012), three aspects of active procrastination, in particular, including outcome satisfaction, preference of pressure, and ability to meet deadlines were positively correlated with self-efficacy. This finding supported Chu and Choi's view that self-efficacy is one of the distinguishing characteristics that separate active procrastinators from their passive counterparts. According to the description, active procrastinators embrace the idea that working efficiency could be achieved under an optimal time pressure. They hold confident in their ability to produce a quality product under time pressure. High levels of self-efficacy regarding their academic success also enables these students to become better regulators in redirecting their effort toward tasks that are more urgent or interesting to them. This possibility was also supported by the significant correlation between active procrastination and effort regulation.

To support the idea that active procrastination is an adaptive type of procrastination, active procrastination should be distinguishable from passive procrastination. Findings from the current study contradicted Chu and Moran's results that indicated the APS was independent from the PASS (2009). However, findings were consistent with those studies framed within a self-regulated learning perspective (e.g., Cao, 2012b; Park & Sperling, 2012). Moreover, few distinctions between active and passive procrastinators' motivational beliefs and learning strategies were indicated, which suggests that active procrastinators and passive procrastinators may not represent two separate groups. They both demonstrate procrastination and also share a similar level of motivational beliefs and regulatory abilities.

Findings also suggested that active procrastination might not be conceptually distinct from traditionally defined academic procrastination. Of the four characteristics identified by Choi and Moran (2009), the active and the passive groups in this work only showed differences on outcome satisfaction and preference of pressure, but not on intentional decision to procrastinate and ability to meet deadlines.

These findings suggest that although active procrastinators often claim that they defer tasks in a regulatory manner, their behavior, however, indicates they engage in behavior similar to passive procrastinators. This may support Tuckman's view that active procrastination is simply self-deception. Findings across varied settings and achievement groups suggested that students who achieve better academic performance were more inclined to engage in defined active procrastination behaviors. This result was consistent with the idea that capable individuals are likely to produce successful "last minute" product (Ferrari et al., 1995). It is also possible that high achieving individuals do not believe that a task such as a writing assignment is worth the time it consumes, or they may believe that working at an earlier time point would not result in big quality differences in their work. They may also think that their ability is not well represented by time consuming tasks with distant rewards. Instead, they may choose to challenge themselves by postponing the task to the deadline. Therefore, their outcome satisfaction could be tied to the completion of the task rather than the quality of the task. Hence, high-achieving individuals may use procrastination to induce their motivation in order to achieve effectiveness rather than to protect their self-worth. This claim is consistent with research conducted by Schraw and colleagues (2007) in which participants reported planned procrastination for such benefits.

The current study provides an important contribution to the existing research by addressing academic procrastination across course settings and with high achieving students. More research, however, is necessary to examine inconsistent findings among studies that define academic procrastination differently. That is, whether or not intentional and purposeful delay should be considered as procrastination should be clarified among scholars studying procrastination. Future research should also target limitations from the current study. For example, research must attend to the methods of operationalizing active procrastination. In existing studies, a two-step method (e.g. Chu & Choi, 2005) is employed to separate procrastination patterns. This method first defines active procrastinators as procrastinators and limits the identification of different behavior, affect, and cognition between these types of procrastinators. As a result, assessing passive and active procrastination tendencies separately is undermined. This limitation provides possible explanations for why active procrastinators in the current study showed similar self-handicapping tendencies, motivation orientation, and strategy use to that of passive procrastinators. Alternative measures are needed in order to provide better discrimination between active procrastinators and their otherwise procrastinating peers. In addition to this measurement limitation future research should also target individuals' procrastination tendencies across tasks. Further studies might also include measures to assess students' beliefs and perceptions about their reasons of procrastination to better distinguish "wishful thinking" from metacognitive control strategies (Tuckman, 2002). In short, effective measurement of the intention-action gap is necessary in order to differentiate actual active procrastination behavior from self-induced claims students use to justify their passive delay. Importantly, such research would benefit from data derived from diary studies or progress reports as additional information to examine the intention-action gap.

In conclusion, the findings from this study were both expected and surprising. Correlational analysis supported the assumption that active procrastination corresponds with some aspects of self-regulated learning; the results supported that higher-achieving students were more likely to procrastinate in an active fashion while students in the lower-performing group were less likely to do so. Group comparisons indicated that high-achieving individuals tend to adaptively use procrastination as a regulatory strategy. However, this study failed to find convincing evidence to support that active procrastination is an independent construct from traditionally defined academic procrastination. The significant correlation between APS scores and PASS scores undermined the validity of the active procrastination construct. Additionally, findings also suggested that active procrastinators do not possess regulatory knowledge and skills similar to non-procrastinators and are also likely to engage in negative procrastination behaviors and to procrastinate for self-handicapping purposes. These unexpected findings indicate that additional research is necessary to better understand the relations among procrastination tendencies.

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