Relations between Self-Efficacy and Procrastination Types in College Students

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Author Note

Abstract

The relation of self-efficacy to procrastination was assessed using the General Self-Efficacy Scale (Schwarzer & Jerusalem, 1995), Active Procrastination Scale (Chu & Choi, 2005), and items from the General Procrastination Scale (Lay, 1986). Each of 106 college students was assigned a self-efficacy score and multiple procrastination scores. General procrastination was negatively correlated with self-efficacy ($p = .001$), whereas active procrastination was positively correlated with self-efficacy ($p = .02$). In domains where students feel more competent, they are more likely to engage in active forms of procrastination rather than maladaptive procrastination. Relations between self-efficacy and different types of procrastination, along with potential mediating motivational factors, are discussed. Potential strategies to identify and target maladaptive procrastination in college students are proposed.

Keywords: self-efficacy, procrastination, college students, active procrastination, passive procrastination

Relations between Self-Efficacy and Procrastination Types in College Students

The topic of procrastination is so deeply rooted in the American conscious that it penetrates our daily use of idioms. Such sayings as "the early bird gets the worm" and "never put off till tomorrow what you can do today" are common in contemporary American conversation, and they reflect people's attempts to combat procrastination by self-instructed immediate action and effort. Procrastination knows no gender, racial, or economic bounds; people worldwide procrastinate despite variations in cultural norms and parenting practices (see Ferrari, Diaz-Morales, O'Callaghan, Diaz, & Argumendo, 2007; Ferrari & Landreth, 2014), and nonhuman animals procrastinate (see Mazur, 1996, 1998). But perhaps no other domain exposes our tendencies to procrastinate more than university studies, where clear deadlines are provided to young adults negotiating self-management of unscheduled hours often for the first time in their lives. The present work aimed to explore procrastination in college students by measuring their tendencies to procrastinate, identifying whether their procrastination was intentional and/or pervasive, and determining any relations between their procrastination and academic self-efficacy. Understanding the role of academic self-efficacy (or, perceived competence) in procrastination opens new avenues for finding students at risk and for addressing dysfunctional procrastination in college students.

Procrastination, as defined by Solomon and Rothblum (1984), is the behavior of needlessly delaying a displeasing task. As extended by Ackerman and Gross (2005), procrastination necessarily involves recognition that a task needs to be done and involves a person's control over the ability to complete the task. Sometimes a person wants to complete the task and expects that outcomes will be worse if procrastination occurs, but actions towards completing the task still fail to occur (Steel, 2007). In behavioral terms, procrastination involves

choice of a later, and sometimes larger, work requirement over a sooner, sometimes smaller, work requirement (Sutcliffe, Sedley, Hunt, & Macaskill, 2018). For college students, 80-95% of whom procrastinate regularly and over 40% of whom report high levels of procrastination (Rothblum, Solomon, & Murakami, 1986; Wang, Ruiqing, Yuluo, Zehua, Jin, Qingqing, & Bing, 2018), procrastination usually involves delaying studying, working, or completing assignments. This tendency to procrastinate can yield consequences that–by rational measures–outweigh the temporary pleasure of putting off the task. Negative consequences include increased stress, impaired learning, missed deadlines, slowed progression towards graduation, and myriad missed opportunities and reinforcers (e.g. Chu & Choi, 2005; Dietz, Hofer, & Fries, 2007; Haycock, McCarthy, & Skay, 1998; Janssen & Carton, 1999; Steel).

The potential downfalls and literal costs of academic procrastination beg the question of why students engage in such detrimental behavior. Some (e.g., Dietz et al., 2007) argue procrastination is a failure of self-regulation, or insensitivity to delayed consequences, as when the immediate fun of going out with friends overrides the impact of future test grades. Others, like Wolters (2003), argue procrastination is linked more specifically to one's levels of goal orientation and fear of failure. From this latter motivational perspective, a person's tendency to avoid or postpone (i.e., procrastinate) goal-related tasks depends on the perceived likelihood of task success. As examples, students would be more likely to put off working on a paper perceived to be difficult with an expected low grade/outcome or to put off math homework if they perceive themselves weak in mathematical domains. Alternatively, students who expect their performance and outcomes to be positive would be likely to begin work on the task earlier (and with less fear and apprehension). In other words, procrastination might depend, in part, on one's self-efficacy. *Self-Efficacy*, simply put, is a sense of competence; it involves believing that

one can exhibit behaviors that produce desired outcomes (Shoham-Salomon, Avner, & Neeman, 1989). Indeed, past research (e.g., Haycock et al., 1998; Wolters, 2003) has revealed negative relations between procrastination and self-efficacy and that self-efficacy mediates relations between intentions and procrastination (Sirois, 2004). People who reported higher levels of self-efficacy were less likely to procrastinate or more likely to follow stated intentions.

The relation between procrastination and self-efficacy is not so simple, however; it is important to consider the reasons *why* people procrastinate or consider *two types* of procrastination. Chu and Choi (2005) proposed a difference between what they termed *active procrastinators* and *passive procrastinators*, two types of people who procrastinate for different reasons. Although there are multiple reports of negative relations between procrastination and self-efficacy (e.g., Haycock et al., 1998; Wolters, 2003), Chu and Choi reported a *positive* relation between *active* procrastination and self-efficacy. It seems active procrastinators, unlike passive procrastinators, are confident they will finish a task even if they delay the work. For active procrastinators, a belief that one can produce desired outcomes leads to deliberate, strategic procrastination. Further, this type of planned procrastination represents a use of self-regulation rather than a lack of self-regulation (Chowdhury & Pychyl, 2018). Conversely, passive procrastinators, defined as low scorers on a scale of active procrastination, might delay work because of anxiety surrounding the task and its outcomes. Passive procrastinators do not plan or intend to procrastinate but become paralyzed under pressure. Ironically, it seems their desire to succeed, or to avoid failure, works against their ability to do so.

The purpose of the present study was to build upon prior analysis of active procrastination as a specific procrastination subtype. More specifically, the present study attempted to: (a) replicate the assessment and identification of active procrastinators on another

college campus (cf. Chu & Choi, 2005; Choi & Moran, 2009), (b) analyze the relation, if any,

between self-efficacy and general procrastination, and (c) assess the relation, if any, between

active procrastination and general procrastination. This study extends prior work on

procrastination, which focused primarily on general procrastination, by assessing *active*

procrastination. The main hypotheses were:

1. Self-efficacy and general procrastination are negatively related. This prediction is

   based on prior findings that low levels of perceived competence on a task can lead a

   person to delay engaging in the task.

2. Self-efficacy and active procrastination are positively related. This prediction is based

   on Chu and Choi's suggestion that active procrastination is a self-regulatory strategy

   rather than a self-regulatory failure. From this, we believed that those with perceived

   competence on a task would effectively delay working on it in a way that is

   functional and does not hamper their performance outcomes.

Method

Participants

All of the 106 participants were undergraduate students who were conveniently selected

based on their enrollment and attendance in psychology or sociology classes at Columbus State

University in Columbus, Georgia. There were no incentives provided for participation. All

procedures were approved by a Human Subjects Review Committee.

Materials

Two survey instruments–the General Self-Efficacy Scale (Schwarzer & Jerusalem, 1995)

and a procrastination survey containing 20 items (see Table 1)–were used. The first 12 items on

the procrastination survey, intended to measure students' levels of active procrastination, were

Chu and Choi's (2005) Active Procrastination Scale (APS). No aspects of the APS were altered.

The remaining 8 items, intended to measure general procrastination, were taken from Lay's

(1986) General Procrastination Scale (GPS) for student populations that originally contained 20

items. The GPS has been validated with replicated use in English (Hasanagic & Ozsagir, 2018)

and other languages (e.g., Spanish; Diaz-Morales, Ferrari, Diaz, & Argumedo, 2006), and

shortened versions of the scale with as few of 5 items have shown that all 20 items are not

necessary for yielding reliable identification of procrastination tendencies (Klein, Beutel, Muller,

Wolfling, Brahler, & Zenger, 2019; Sirois, Yang, & van Eerde, 2019; Svartdal & Steel, 2017).

The 8 items used in the present study to measure general procrastination (shown as Items 13-20

in Table 1) were chosen for their lack of redundancy with items on the Active Procrastination

Scale and for broad, relevant language. An example is our retainment of the item "In preparing

for some deadline, I often waste time by doing other things" that seemed broader, more currently

relevant, and inclusive than other items from the scale we removed: "When I am finished with a

library book, I return it right away regardless of the date it's due", "I generally return phone calls

promptly", "A letter may sit for days after I write it before mailing it", "I always seem to end up

shopping for birthday or Christmas gifts at the last minute". Finally, researchers chose 8 items

from the GPS so that the entire procrastination survey (that includes the active procrastination

scale) would contain 20 items.

Procedure

Survey instruments were prepared prior to administration by stapling together single

pages of the two one-page surveys (General Self-Efficacy Scale on page 1 and procrastination

survey on page 2) and marking both forms with an identical, randomly generated 4-digit

participant code. Paper and pencil administration occurred in classrooms where course

instruction occurred. Researchers of the current study were welcomed into the various

classrooms by the professors at the beginning of the scheduled class time. The purpose of the

study and the voluntary nature of participation were explained to the potential participants while

an Informed Consent Form was distributed to each student. Researchers then distributed the two

survey instruments to any student who consented to participation while they collected signed

consent forms in a manila envelope. Completed surveys were collected face down into another

manila envelope that was stored in a locked research lab until data were analyzed.

Informed consent forms and paper copies of the completed surveys were retained for one

year before they were destroyed. Participants' responses to individual items on the survey were

entered into Excel (MS Office, 2007) and data were analyzed using Excel and Statistical Package

for Social Sciences (SPSS). Electronic data files of raw data are stored in a password-protected

cloud drive.

Results

Internal consistency analyses indicated items within the General Self-Efficacy Scale ($\alpha =$

.77) and the procrastination scale ($\alpha = .75$), see Table 1, were reliable. Test-Retest reliability was

calculated for the procrastination survey using responses from 12 people not used in the study's

sample. Correlations between scores on the first and second administration, taken 2 months

apart, of the scale were significant for active procrastination (Items 1-12, $r = .94$, $p < .001$) and

general procrastination (Items 13-20, $r = .94$, $p < .001$).

The General Self-Efficacy Scale contained response options ranging from 1 to 4,

representing the options "Not at all true," "Hardly true," "Moderately true," and "Exactly true,"

respectively. Self-Efficacy scores were computed by summing each participant's answer to all 10

items on the scale, such that scores could range from 10-40. The distribution of self-efficacy scores for the sample was normal ($M = 30.78$, $SD = 3.79$).

The procrastination survey (Table 1) contained response options ranging from 1 to 7, representing answers from "Strongly Disagree" to "Strongly Agree," where 4 was a neutral response ("Neither Agree nor Disagree"). Based on responses to items in the administered procrastination scale, six procrastination scores were generated for each participant. Responses to items marked with asterisks in Table 1 were reverse scored. Mean responses to the first 12 items produced an active procrastination score for each participant. Then four subscale scores of active procrastination, as described by Chu and Choi (2005), were computed as mean responses to a set of three items as follows: "Preference for Pressure" (Items 1, 3, & 4), "Ability to Meet Deadlines" (Items 2, 8, & 9), "Intentional Procrastination" (Items 5, 7, & 12), and "Outcome Satisfaction" (Items 6, 10, & 11). Finally, the last 8 items of the procrastination scale–those derived from Lay (1986)–were summed to compute participants' general procrastination scores, such that scores could range from 8-56. The distributions of scores on the scales and subscales of procrastination for the sample were normal; means and standard deviations of these scores across participants are shown at the bottom of Table 1.

Bivariate correlations were calculated between the six scores on the procrastination scale. There were significant positive relations between active procrastination and general procrastination ($r = .232$, $p < .05$). Not surprisingly, there also were significant correlations between the total active procrastination score and scores on all four subscales of Chu and Choi's active procrastination scale: Preference for Pressure ($r = .799$, $p < .01$), Intentional Procrastination ($r = .594$, $p < .01$), Ability to Meet Deadlines ($r = .300$, $p < .01$), and Outcome Satisfaction ($r = .869$, $p < .01$).

To address the purpose of the present study, the relation between procrastination scores and self-efficacy were analyzed, yielding a negative relation between self-efficacy and general procrastination ($r = -.305$, $p < .01$) but a positive relation between self-efficacy and active procrastination ($r = .235$, $p < .05$). To assess further the differences between types of procrastinators, participants were divided into groups based on active procrastination scores (using the same cutoff score, 4.33, as Chu & Choi, 2005). Participants who scored equal to or above 4.33 on the active procrastination scale were labeled as "active procrastinators" ($n = 63$) and participants who scored below 4.33 were labeled as "passive procrastinators" ($n = 43$). Active procrastinators ($M = 31.54$, $SD = 3.42$) scored significantly higher on the General Self-Efficacy Scale than did passive procrastinators ($M = 29.67$, $SD = 4.06$), $t(104) = 2.56$, $p = .012$, 90% CI [0.417 - 3.313]. Active procrastinators ($M = 4.83$, $SD = 0.827$) also scored significantly higher on the measure of general procrastination than did the passive procrastinators ($M = 4.328$, $SD = 1.202$), 90% CI [0.108 - 0.889].

Discussion

The two main hypotheses of the present research were supported. That is, people with higher self-efficacy scored lower on the general procrastination scale and scored higher on the active procrastination scale. These findings replicate those of prior researchers (e.g., Cerino, 2014; Wolters, 2003) who reported a significant negative relation between self-efficacy and general procrastination. Perhaps more importantly, the findings also extend those of Chu and Choi (2005) who reported a significant negative relation between self-efficacy and overall academic procrastination, yet a positive relation between self-efficacy scores and active procrastination within academic domains (see also Seo, 2013). The present results too show converse relations between self-efficacy and procrastination for the two types of procrastinators,

active and passive. Individuals who feel competent procrastinate successfully in that they are still

able to meet deadlines and achieve outcomes that are satisfactory. Individuals who lack feelings

of competence, by comparison, may procrastinate because the task is overwhelming or daunting.

It seems that not all procrastination is made equal.

An immediate implication of this study is the need to revise the popular view of

procrastination as "bad." Procrastination at times may be functional, rather than dysfunctional;

for some people it can be a means of time management and task organization. Students who have

a high level of self-efficacy in academic domains, such as students who are prepared well for

college, may actively procrastinate in a way that is helpful and productive. Another way of

viewing some types of procrastination, then, is as a functional strategy. This departs from most

conceptualizations of procrastination as universally a negative tendency. Not everyone (e.g.,

Chowdhury & Pychyl, 2018) agrees that active procrastination should be considered a type of

procrastination because it does not involve self-regulatory failures with impaired outcomes. By

definition, these folks argue, procrastination should involve deficits in regulation and goal

attainment from delaying tasks. Continued debate and empirical exploration can clarify our use

and understanding of *procrastination* as something defined by actions involved or their impacts.

For translating the present research to educational settings, the findings highlight the need

to understand the functions of procrastination for different people. Procrastination that looks the

same, or is structurally similar, might function quite differently for different people or even

across different domains. College students who procrastinate to the extent that the tendency

limits success would be best served if strategies used to alleviate their maladaptive patterns were

created from an understanding of whether the procrastination results from a low level of self-

efficacy. After all, there is evidence that low self-efficacy mediates positive relations between

neuroticism and procrastination (Wang et al., 2018). That is, feelings of worry with negative

emotions do not necessitate procrastination but may do so in cases when students doubt their

abilities/competence on a task. The motivational sources, combined with other behavioral

correlates (e.g., preference for evening, Diaz-Morales, Ferrari, & Cohen, 2008; Digdon &

Howell, 2008) provide useful information for educators. Counselors or other service providers

could use measures of self-efficacy and procrastination to target potential problems, not only

problems related to unsuccessful procrastination behaviors but also the sources of the students'

limited self-efficacy.

One source of limited self-efficacy in students seems to be their selection of major area of

study and coursework based on suggestions from others and societal models. It might be more

functional for students to select majors that reflect their areas of skill and excitement, thereby

inherently increasing their self-efficacy and intrinsic motivation. Passive procrastinators tend to

be extrinsically motivated more than intrinsically motivated (see Brownlow & Reasinger, 2000;

Conti, 2000), so students who attend college for reasons other than their own may be more likely

to passively procrastinate. Providing services and support to transition students from going to

college for reasons outside themselves to going to college for intrinsic reasons could impact

directly students' procrastination levels and strategies. It follows, then, the challenge in dealing

with passive procrastination might be reduced to making learning and academic growth

rewarding for students who currently do not enjoy it.

A limitation of the present study, like most other studies of procrastination, is its reliance

on self-reports. Some researchers, like Solomon and Rothblum (1984), have verified students'

reported procrastination by correlating it with behavioral measures; in their study, high levels of

self-reported procrastination were correlated with submission dates/delays on assignments like

quizzes and research participation. The validity of the present findings depends on the extent to which participants adequately understood and reported their tendencies to procrastinate. A second limitation of the present work is our abbreviation of Lay's (1986) scale based on face validity of item content instead of factor analysis. Although other studies successfully created brief versions of the Lay, they statistically determined retained items based on their contributions to total scores on the scale. The present study chose items for other reasons, such as their lack of redundancy with the active procrastination scale and their contemporary relevance.

It seems a first line in subsequent research could be additional validation of the 8 items we used as a measure of general procrastination. To a large extent, since the completion of our work, others have tested shortened versions of the GPS (Lay, 1986). Klein and colleagues (2019), via confirmatory factor analysis, found that five items of the GPS yielded better internal validity and convergent validity scores than the 9-item scale originally modified for Germans (Klingsieck & Fries, 2012). The five items retained in their shortened version were "I often find myself performing tasks that I had intended to do days before"; "I do not do assignments until just before they are to be handed in"; "Even with jobs that require little else except sitting down and doing them, I find they seldom get done for days"; "In preparing for some deadline, I often waste time by doing other things"; "I am continually saying 'I'll do it tomorrow'". Three of their five items were part of the 8 items used in the present assessment of general procrastination. Klein and colleagues' 5-item scale of general procrastination can be tested in American college students to support or further determine if the shortened scale is equally or more effective compared to other scales (Procrastination Assessment Scale-Students, PASS; Solomon & Rothblum, 1984; Tuckman's, 1991, 16-item procrastination scale; Adult Inventory of Procrastination Scale, AIP; McCown, Johnson, & Petzel, 1989) in measuring a singular

construct, *general procrastination* (cf. Svartdal & Steel, 2017). Folding Lay's older scale into the more recent general procrastination scale created by Lodha, Sharma, Dsouza, Marathe, Dsouza, Rawal, Pandya, and De Sousa (2019) seems a good starting point.

The present study assessed self-efficacy broadly, as a general belief in one's abilities rather than more nuanced beliefs across task type (i.e., domain), task difficulty, and states of anxiety and stress. Aversive and difficult tasks generate more procrastination (Solomon & Rothblum, 1984). Further, Cikrikci (2016) reported increasing tendencies to procrastinate as educational stress increased and as metacognitive awareness (e.g., realizing one's levels of understanding and goal planning) decreased. Procrastinators, compared to those with greater metacognitive skills who generally procrastinate less, more often attribute successful academic work to external and temporary variables (Rothblum et al., 1986). Said another way, procrastination is more likely for students, even graduate students, with more external locus of control (Dervishaliaj & Xhelili, 2014). Documented relations between self-efficacy and internal locus of control fit the present finding that procrastination is related to lower self-efficacy, and strategies that foster more internally directed attributions seem useful for combating harmful procrastination. More research can enhance understanding the dual uses of active and passive procrastination strategies across self-efficacy fluctuations (e.g., across a semester, as studied by Rice et al., 2012).

Another variable related to students' tendencies to procrastinate is their focus on outcomes compared to processes. Kaftan and Freund (2019), for instance, found students who focused on completion/outcome of a bachelor's thesis were more likely to experience stress related to the activity and less likely to report pleasantness and motivation regarding the activity. Related to outcome focus are perfectionism and fear of failure that also drive one's tendency to

procrastinate, even in domains where students feel competent (Bong, Hwang, Noh, & Kim,

2014). And, finally, research on *pre*crastination has emerged in the past five years, exposing

some people's tendencies to complete tasks early and quickly (to "check them off") in ways that

contribute to procrastination of other tasks and/or limit their products/outcomes (see Wasserman,

2019, for a review). There currently is no scale developed for precrastination, leaving it a novel

endeavor for those interested in college students' regulatory strategies and performance

outcomes. We recommend items from existing procrastination scales (e.g., Lodha et al., 2019) as

a starting point for precrastination survey development and validation to capture tendencies

noted in seminal experimental analyses of the topic (e.g., Wasserman & Brzykcy, 2015).

Attempts to extrapolate these findings beyond college students raises concern because,

overwhelmingly, college students comprise samples used in studies of procrastination. In reality,

college students might procrastinate differently, qualitatively and quantitatively, from others.

Ferrari and colleagues (2007) found that close to 15% of adults across various cultures report

being a procrastinator, but the percent of college students who report procrastinating has been

higher across many decades (see Beswich, Rothblum, & Mann, 2011; Haycock et al., 1998; Hill,

Hill, Chabot, & Barrall, 1978). Are there changes in maturation that contribute to the differences

in procrastination prevalence in these two populations? Or do the tasks inherently involved in

being a college student (e.g., tests, due dates for papers and projects) lend themselves to more

procrastination? Even more specifically, do those academic tasks lend themselves to lower levels

of self-efficacy and, therefore, greater passive (i.e., maladaptive) procrastination? These types of

questions warrant further assessment to identify factors involved in procrastination.

Lastly, beyond understanding conditions under which procrastination in college students

(and potentially other populations) occurs, further exploration of treatments for academic

procrastination is needed. Prior attempts at cognitive-behavior treatments have been partially

successful, with more recent acceptance-based treatments also as viable options (Glick & Orsillo,

2015). Glick and Orsillo reported that mindfulness training that required students to openly

process emotions involved in procrastination and complete reflection exercises was more

effective than time-management training. Generally, however, these interventions often help

students who already value academic tasks and outcomes. A more elusive piece of the

procrastination puzzle is elevating amotivated students' interests and process focus.

References

Ackerman, D. S., & Gross, B. L. (2005). My instructor made me do it: Task characteristics of

    procrastination. *Journal of Marketing Education, 27*, 5–13.

    http://dx.doi.org/10.1177/0273475304273842

Beswich, B., Rothblum, E. D., & Mann, L. (2011). Psychological antecedents of student

    procrastination. *Australian Psychologist, 23*(2), 207-217.

Bong, M., Hwang, A., Noh, A., & Kim, S.-i. (2014). Perfectionism and motivation of

    adolescents in academic contexts. *Journal of Educational Psychology, 106*(3), 711-729.

    https://doi.org/10.1037/a0035836

Brownlow, S., & Reasinger, R. D. (2000). Putting off until tomorrow what is better done today:

    Academic procrastination as a function of motivation toward college work. *Journal of

    Social Behavior & Personality, 15*(5), 15-34.

Cerino, E. S. (2014). Relationships between academic motivation, self-efficacy, and academic

    procrastination. *Psi Chi Journal of Psychological Research, 19*(4), 156-163.

Choi, J. N., & Moran, S. V. (2009). Why not procrastinate? Development and validation of a

    new active procrastination scale. *The Journal of Social Psychology, 149*(2), 195-212.

Chowdhury, S. F., & Pychyl, T. A. (2018). A critique of the construct validity of active

    procrastination. *Personality and Individual Differences, 120*, 7-12.

    https://doi.org/10.1016/j.paid.2017.08.016

Chu, A. H. C., & Choi, J. N. (2005). Rethinking procrastination: Positive effects of "active"

    procrastination behavior on attitudes and performance. *The Journal of Social Psychology,

    145*, 245-263.

Cikrikci, O. (2016). Academic procrastination: The role of metacognitive awareness and

    educational stress. *Mediterranean Journal of Educational Research, 19*, 39-52.

Conti, R. (2000). Competing demands and complimentary motives: Procrastination on

    intrinsically and extrinsically motivated summer projects. *Journal of Social Behavior &*

    Personality, 15(5), 47-59.

Dervishaliaj, E., & Xhelili, G. (2014). Academic procrastination and locus of control in graduate

    students. In *International Conference on Research and Education Challenges towards*

    the Future (ICRAE 2014). Retrieved from http://konferenca. unishk. edu.

Diaz-Morales, J. F., Ferrari, J. R., & Cohen, J. R. (2008). Indecision and avoidant

    procrastination: The role of morningness-eveningness and time perspective in chronic

    delay lifestyles. *The Journal of General Psychology, 135*(3), 228-240.

Diaz-Morales, J. F., Ferrari, J. R., Diaz, K., & Argumendo, D. (2006). Factorial structure of three

    procrastination scales with a Spanish adult population. *European Journal of*

    Psychological Assessment, 22(2), 132-137. https://doi.org/10.1027/1015-5759.22.2.132

Dietz, F., Hofer, M., & Fries, S. (2007). Individual values, learning routines and academic

    procrastination. *British Journal of Educational Psychology*, *77*(4), 893-906.

Digdon, N. L., & Howell, A. J. (2008). College students who have an eveningness preference

    report lower self-control and greater procrastination. *The Journal of Biological &*

    Medical Rhythm Research, 25(6), 1029-1046.

Ferrari, J. R., Diaz-Morales, J. F., O'Callaghan, J., Diaz, K., & Argumendo, D. (2007). Frequent

    behavioral delay tendencies by adults: International prevalence rates of chronic

    procrastination. *Journal of Cross-Cultural Psychology, 38*(4), 458-464.

Ferrari, J. R., & Landreth, N. (2014). "Guess I am a procrastinator": Self and other perceptions among rural US citizens. *North American Journal of Psychology, 16*(1), 121-128.

Glick, D. M., & Orsillo, S. M. (2015). An investigation of the efficacy of acceptance-based behavioral therapy for academic procrastination. *Journal of Experimental Psychology: General, 144*(2), 400-409. https://doi.org/10.1037/xge0000050

Hasanagic, A., & Ozsagir, C. B. (2018). The validity exploration of General Procrastination Scale (Lay, 1986). *Epiphany, 11*(1), 55-74.

Haycock, L. A., McCarthy, P., & Skay, C. L. (1998). Procrastination in college students: The role of self-efficacy and anxiety. *Journal of Counseling and Development, 76*, 317-324.

Hill, M. B., Hill, D. A., Chabot, A. E., & Barrall, J. F. (1978). A survey of college faculty and student procrastination. *College Student Journal, 12*(3), 256-262.

Janssen, T., & Carton, J. S. (1999). The effects of locus of control and task difficulty on procrastination. *The Journal of Genetic Psychology, 160*(4), 436-442.

Kaftan, O. J., & Freund, A. M. (2019). A motivational perspective on academic procrastination: Goal focus affects how students perceive activities while procrastinating. *Motivation Science, 5*(2), 135-156. https://doi.org/10.1037/mot0000110

Klein, E. M., Beutel, M. E., Muller, K. W., Wolfling, K., Brahler, E., & Zenger, M. (2019). Assessing procrastination: Dimensionality and measurement invariance of the General Procrastination Scale – Screening (GPS-S) in a representative sample. *European Journal of Psychological Assessment, 35*(5), 633-640. https://doi.org/10.1207/1015-5759/a000441 (Supplemental)

Klingsieck, K. B., & Fries, S. (2012). Allgemeine prokrastination. Entwicklung und validierung einer deutschsprachigen kurzskala der General Procrastination Scale (Lay, 1986)

[Procrastination: Development and validation of the German Short Scale of the General

Procrastination Scale (Lay, 1986)]. *Diagnostica, 58*(4), 182-

193. https://doi.org/10.1026/0012-1924/a000060

Lay, C. H. (1986). At last, my research article on procrastination. *Journal of Research in

Personality, 20*, 474-495. Scale available from:

http://www.yorku.ca/rokada/psyctest/prcrasts.pdf

Lodha, P., Sharma, A., Dsouza, G., Marathe, I., Dsouza, S., Rawal, S., Pandya, V., and Sousa, A.

D. (2019). General procrastination scale: Development of validity and reliability.

International Journal of Medicine and Public Health, 9(3), 74-80.

Mazur, J. E. (1996). Procrastination by pigeons: Preference for larger, more delayed work

requirements. *Journal of the Experimental Analysis of Behavior, 65*(1), 159-171.

Mazur, J. E. (1998). Procrastination in pigeons with fixed-interval response requirements.

Journal of the Experimental Analysis of Behavior, 69(2), 185-197.

McCown, W., Johnson, J., & Petzel, T. (1989). Procrastination, a principal components

analysis. *Personality and Individual Differences, 10*, 197–202. doi: 10.1016/0191-

8869(89)90204-3

Riaz, S., & Saif, A. (2017). Relationship between academic procrastination and stress: Mediating

role of mindfulness among university students. *Pakistan Journal of Languages and

Translation Studies, 2017*, 74-86.

Rice, K. G., Richardson, C. M. E., & Clark, D. (2012). Perfectionism, procrastination, and

psychological distress. *Journal of Counseling Psychology*, *59*(2), 1-15.

https://doi.org/10.1037/a0026643

Rothblum, E. D., Solomon, L. J., & Murakami, J. (1986). Affective, cognitive, and behavioral

differences between high and low procrastinators. *Journal of Counseling Psychology,*

33(4), 387-394. https://doi.org/10.1037/0022-0167.33.4.387

Schwarzer, R., & Jerusalem, M. (1995). Generalized self-efficacy scale. In J. Weinman, S.

Wright, & M. Johnston, *Measures in health psychology: A user's portfolio. Causal and*

control beliefs (pp. 35- 37). Windsor, England: NFER-NELSON.

Seo, E. H. (2013). A comparison of active and passive procrastination in relation to academic

motivation. *Social Behavior & Personality: An International Journal, 41*(5), 777-786.

Shoham-Salomon, V., Avner, R., & Neeman, R. (1989). You're changed if you do and changed

if you don't: Mechanisms underlying paradoxical interventions. *Journal of Consulting*

and Clinical Psychology, 57, 590-598.

Sirois, F. M. (2004). Procrastination and intentions to perform health behaviors: The role of self-

efficacy and the consideration of future consequences. *Personality and Individual*

Differences, 37(1), 115-128.

Sirois, F. M., Yang, S., & van Eerde, W. (2019). Development and validation of the General

Procrastination Scale (GPS-9): A short and reliable measure of trait procrastination.

Personality and Individual Differences, 146, 26-33.

Solomon, L. J., & Rothblum, E. D. (1984). Academic procrastination: Frequency and cognitive-

behavioral correlates. *Journal of Counseling Psychology*, *31*, 504-510.

Steel, P. (2007). The nature of procrastination: A meta-analytic and theoretical review of

quintessential self-regulatory failure. *Psychological Bulletin, 133*(1), 65-94.

Sutcliffe, K. R., Sedley, B., Hunt, M. J., & Macaskill, A. C. (2018). Relationships among

academic procrastination, psychological flexibility, and delay discounting. *Behavior*

Analysis: Research and Practice, 19(4), 315-326. http://dx.doi.org/10.1037/bar0000145

Svartdal, F., & Steel, P. (2017). Irrational delay revisited: Examining five procrastination scales

in a global sample. *Frontiers in Psychology, 8*: 1927.

https://doi.org/10.3389/fpsyg.2017.01927

Tuckman, B.W. (1991). The development and concurrent validity of the procrastination scale.

Educational and Psychological Measurement, 51, 473–480.

Wang, W., Ruiqing, H., Yuluo, L., Zehua, W., Jin, Y., Qingqing, L., & Bing, L. (2018). The

mediating role of self-efficacy between neuroticism and procrastination among

undergraduates. *IEEE International Conference on Mechatronics and Automation*

(ICMA), Changchun, pp. 67-71. https://doi.org/ 10.1109/ICMA.2018.8484534

Wasserman, E. A., & Brzykcy, S. J. (2015). Pre-crastination in the pigeon. *Psychonomic Bulletin*

& Review, 22, 1130–1134. https://doi.org/10.3758/s13423-014-0758-3

Wasserman, E. A. (2019). Precrastination: The fierce urgency of now. *Learning &*

Behavior, 47, 7–28. https://doi.org/10.3758/s13420-018-0358-6

Wolters, C.A. (2003). Understanding procrastination from a self-regulated learning perspective.

Journal of Educational Psychology, 95(1), 179-187.

Table 1

Means and Standard Deviations of Responses to Items (1-12) Measuring Active Procrastination

and Items (13-20) Measuring General Procrastination

Scale Items	M	SD
1. I tend to work better under pressure.	4.79	1.58
2. Since I often start working on things at the last moment, I have trouble finishing assigned tasks most of the time.*	3.09	1.65
3. I am motivated by quickly approaching deadlines.	5.33	1.45
4. I don't like feeling that I have inadequate time to complete an assignment.*	5.41	1.48
5. I study for exams well in advance so that I'm not caught cramming at the last moment.*	2.87	1.70
6. I usually produce my best work when I'm competing with a deadline.	4.84	1.65
7. If given a week to complete an assignment, I would likely wait until the day before it's due to start working on it.	4.06	1.84
8. I usually study or complete an assignment on time (before the test or before it's due).	5.49	1.44
9. I frequently submit incomplete assignments because I waited too long to begin them.*	1.89	1.34
10. I feel that putting off work until the last minute does not do me any good.*	4.97	1.82
11. When I have to cram for a test, it is reflected in my poor grade.*	4.02	1.78
12. I intentionally put off work to maximize my motivation.	3.05	1.66
13. In preparing for some deadline, I often waste time by doing other things.	4.91	1.53
14. I often find myself performing tasks that I had intended to do days before.	5.40	1.25

15. I often have a task finished sooner than necessary.*	3.82	1.58
16. I am continually saying "I'll do it tomorrow".	4.79	1.67
17. I generally delay before starting on work I have to do.	5.04	1.51
18. When it is time to get up in the morning, I most often get right out of bed.*	3.77	2.23
19. I usually start an assignment shortly after it is assigned.*	3.38	1.67
20. I usually accomplish all the things I plan to do in a day.*	4.16	1.70
Subscale 1: Preference for Pressure	3.18	0.73
Subscale 2: Intentional Procrastination	3.06	1.02
Subscale 3: Ability to Meet Deadlines	4.13	0.76
Subscale 4: Outcome Satisfaction	2.96	0.99
Active Procrastination Score (first 12 items)	4.44	0.76
General Procrastination Score (last 8 items)	37.00	8.17

Note. Item scores were reversed when calculating scores on scale and subscales.