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Psychological and Behavioral Predictors of Procrastination in Undergraduates

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ABSTRACT. Utilizing previous work in personality theory, implicit theory of intelligence, goal orientation, and self-efficacy theory, we conducted this exploratory study to identify predictors of general procrastination tendencies among undergraduates. We analyzed a sample of 267 undergraduate students from introductory psychology courses at a public rural university. A standard multiple regression analysis using IBM SPSS Statistics was performed on 16 psychological variables and 1 behavioral variable to identify presence of predictive influence on the dependent variable of procrastination as measured by Lay (1986) for college student populations. Regression analysis revealed that the model achieved significance at predicting procrastination in undergraduate students, $F(17, 249) = 14.73$, $p < .001$, $r^2 = .50$, adj $r^2 = .47$. The resultant model identified 4 significant predictors and 9 additional significant correlates, 7 of which were significant at $p < .01$. Positive predictors included growth mindset beliefs ($\beta = .16$, $p = .003$) and academic entitlement beliefs ($\beta = .12$, $p = .023$). Negative predictors included conscientiousness ($\beta = -.55$, $p < .001$) and college student efficacy beliefs ($\beta = -.17$, $p = .011$). These findings are consistent with previous work and further support the roles and directional influences of conscientiousness, college student efficacy beliefs, and implicit theory of intelligence beliefs on procrastination, and add to the growing literature on academic entitlement beliefs.

Keywords: procrastination, conscientiousness, efficacy beliefs, growth mindset, academic entitlement beliefs

Procrastination is defined as "the act of needlessly delaying tasks to the point of experiencing subjective discomfort" (Solomon & Rothblum, 1984, p. 503). Most individuals who engage in procrastination wish to reduce this behavior in themselves (Knaus, 1998; Solomon & Rothblum, 1984) as many understand it to be a time waster associated with harmful consequences (Beck et al., 2012; Blatt & Quinlan, 1967; Lay & Schouwenburg, 1993; Przepiorka et al., 2016; Wolters, 2003).

As defined, procrastination remains widespread among college students (Blunt & Pychyl, 1998; Reinecke et al., 2018), with past indications that an estimated 80 to 95% of college students reported engaging in procrastination (O'Brien, 2002) and near 50% indicated consistent and problematic procrastination (Day et al., 2000; Rozental et al., 2015). Historically, procrastination has been a prevalent and serious problem among college students (Blatt & Quinlan, 1967; Blunt & Pychyl, 1998; Ellis & Knaus, 1977; Green, 1982; Pychyl, Morin, et al., 2000; Rabin et al., 2011), with more recent research indicating this behavioral phenomenon may be on the rise (Hinsch & Sheldon, 2013; Kachgal et al., 2001).

Within the college student population, academic procrastination, which positively correlates with general procrastination (Sirin, 2011), is characterized as intentionally delaying the completion of academic-related tasks (Burns et al., 2000). This form of procrastination has been reported in roughly 70% of college students (Schouwenburg, 1995), and is associated with pathological perfectionism (Burns et al., 2000), depression (Solomon & Rothblum, 1984), higher rates of course withdrawals (Semb et al., 1979), missing deadlines (Wolters, 2003), low course grades (Rothblum et al., 1986; Wesley, 1994), guilt (Pychyl, Lee, et al., 2000), anxiety (Rothblum et al., 1986), neuroticism (Watson, 2001), low self-esteem (Ferrari, 2000), and poor academic performance overall (Steel et al., 2001). Additional

research has revealed that academic performance in particular can suffer when the individual is under stress (Tice & Baumeister, 1997). Given that 60% of college students report a desire to decrease their academic procrastination (Solomon & Rothblum, 1984), this highlights their understanding that outcomes associated with procrastination can negatively affect their lives through some influence on behavioral, emotional, or academic functioning (Fee & Tangney, 2012). Despite numerous studies that have explored the consequences of procrastination, a disproportionate share has failed to explore predictors and causes of procrastination (Katz et al., 2014).

Meta-Analytic Correlates and Causes of Procrastination

In her meta-analysis of procrastination across multiple settings, van Eerde (2003) assessed the correlations from 121 studies that examined relationships between procrastination and personality, motivation, affect, and performance variables. Her findings revealed that the largest negative effect sizes were associated with the personality trait of conscientiousness and self-efficacy beliefs, with the largest positive effect size associated with self-handicapping. The effect size associated with the motivation of perfectionism, although significant, was small.

A subsequent meta-analysis by Steel (2007), informed by van Erde's review (2003), sought to review the considerable amount of empirical work done on procrastination dating back to the 1930s. This newer research aimed to review and ultimately summarize the relevant conceptual, theoretical, and empirical work, which was collectively developed from correlational, experimental, and qualitative findings. Steel (2007) further confirmed several key findings of van Eerde (2003) and thus provided a new way to conceptualize the correlates and predictors of procrastination by dividing them into separate categories: task characteristics, individual differences, demographics, and a fourth category he labeled "outcomes," which he describes "indicate the proximal effects of procrastination" (Steel, 2007, p. 67). Findings from these works provided the foundation for the following literature review.

There are individual differences in proneness to procrastination (Bridges & Roig, 1997). Trait/domain theory by Costa and McCrae (1992) describes the relationships between personality correlates and procrastination to explain behavioral tendencies. Some researchers have utilized the traits themselves according to the five-factor model to examine these correlations (Digman, 1990), whereas others have instead chosen to focus on specific facets within traits. The latter approach has led to some degree of uncertainty as no general consensus seems to exist at the facet level within the field of personality theory (John & Sanjay, 1999). For the purposes of the current exploratory study, we chose to assess predictors of procrastination using the traditional five-factor model traits, whose respective hypothesized outcomes are discussed below.

Across multiple studies, the strong correlation between conscientiousness and procrastination has been reliably documented in the literature (Johnson & Bloom, 1995; Lay, 1997; O'Connor & Paunonen, 2007). Defined as "socially prescribed impulse control that facilitates task- and goal-directed behavior, such as thinking before acting, delaying gratification, following norms and rules, and planning, organizing, and prioritizing tasks" (John et al., 2008, p. 120), conscientiousness has emerged as the most essential source trait of procrastination (Lay, 1997; van Eerde, 2003). Specifically, it has been shown that procrastination represents, conceptually, low conscientiousness and a failure to self-regulate (Park & Sperling, 2012; Steel, 2007), as well as a tendency toward heightened distractibility (Grunschel et al., 2013; Steel, 2007). Conversely, it has been shown that possessing a combination of high standards and high conscientiousness is correlated with lower levels of procrastination (Frost et al., 1990). Dewitte and Schouwenburg (2002) claim conscientiousness "explains the lion's share of the variation in procrastination items" (p. 470) regardless of measure used to assess procrastination, a claim supported by the resultant effect size from Steel's meta-analysis (2007), further validating the conclusions of van Eerde (2003).

"Outcomes" emerged as another summary category described by Steel (2007), in which he included mood and performance. High conscientiousness is positively correlated with performance in occupational (Hurtz & Donovan, 2000) as well as educational tasks (Barrick & Mount, 2003; van Eerde, 2003). Thus, individuals who procrastinate should tend to suffer both in terms of how they feel as well as what they personally achieve. The construct of mood shares some overlap with the construct of neuroticism, which by nature includes aspects of both anxiety and depression (Weinstock & Whisman, 2006). Individuals high in neuroticism may be prone to procrastinating due to the presence of depression among these individuals. Procrastination, which tends to negatively affect performance, can subsequently further suppress mood, blurring a possible cause-effect relationship as a poor mood may not only be the result of procrastination, but also a cause (Steel, 2007). The latter has been supported by work in which negative mood emerged as an important precursor to procrastination (Wohl et al., 2010).

Additional recent work on emotional regulation has shown that efforts to improve short-term mood are often prioritized over accomplishing long-term goals,

evidencing a failure to self-regulate which ultimately manifests as procrastination (Sirois & Pychyl, 2013). Furthermore, individuals in poorer moods tend to indicate that they procrastinate, even if their actual behavior does not support their claims of procrastination (Steel et al., 2001). Steel attempts to explain this paradoxical finding by hypothesizing that self-reported procrastination may include a self-assessment shaped by actual behavior as well as a tainted self-concept. Although Steel (2007) does not state or imply that individuals in poorer moods are thus no more likely to procrastinate than individuals in better moods, his earlier findings (Steel et al., 2001) obscure the true relationship between self-reported procrastination and mood. Given these differing findings, mood may potentially correlate with procrastination, but no known definitive evidence concerning the directionality of mood exists (Steel, 2007). In agreement with the articulated stance of Steel (2007), the current authors believe that a poor mood may lead to procrastination as well as be a result of procrastination, indicating a bidirectional influence.

Like the overlap between the roles of mood and neuroticism on procrastination, performance may correlate with procrastination through conscientiousness. Past research indicates that high conscientiousness, when combined with low neuroticism, best predicts success in academic activities (Ross et al., 2003). To the degree that procrastination is representative of low levels of conscientiousness, last-minute efforts should result in less success than efforts made in advance of a deadline (Steel, 2007; Tice & Baumeister, 1997). Such failure to succeed can lower one's self-efficacy, defined as "the belief in one's capabilities to organize and execute the courses of action required to manage prospective situations" (Bandura, 1995, p. 2). Indeed, low academic self-efficacy stemming from poor performance has been indicated as a possible cognitive predictor of procrastination (Chow, 2011; Ferrari et al., 1992). Additionally, as can be observed in mood, poor performance allows for the possibility of two possible cause-effect relationships between procrastination and self-efficacy: Procrastination may lead to poor performance thereby lowering confidence in one's ability to successfully organize and execute a task, but low self-efficacy may be what leads an individual to procrastinate (Lindsley et al., 1995). This blurred distinction between procrastination and performance, given the intervening role of efficacy beliefs, prevents a clearer understanding of their true relationship.

Cohort Effects

Cohort effects are conceptually defined as attitudinal variations in the collective that result from incoming generations being different from outgoing generations due to differences in socialization during early life (Glenn, 2005). More simply, cohort effects are variations in characteristics of an observed phenomenon (e.g., cannabis use among adolescents) over time among individuals with a shared experience (e.g., decade of birth). Such effects can influence the perceived acceptability of thoughts and behaviors across individuals of similar age across time (Ekstam, 2021). Cohort effects in personality may affect the collective perceptions of particular thoughts or behaviors that result in increasing or decreasing frequency of these thoughts and behaviors across members of the same demographic (Roberts et al., 2006). For example, Hamilton et al. (2018) examined frequent cannabis use across three cohorts (those born between 1991 and 2000, those born between 2001 and 2010, and those born between 2011 and 2018). They found those born in the earliest cohort experienced the greatest cohort effect, as this cohort demonstrated the greatest collective decrease in frequent cannabis use compared with the latter two cohorts.

The cohort analysis described by Steel (2007) indicates that procrastination increased globally from 1982 through 2003, but no consistent significant effects of year of publication on procrastination were found during or after 2004. This indicates that although rates of procrastination no longer significantly increased as of 2004, they also did not significantly decrease during this time. Recent work has confirmed that overall rates of procrastination remain high regardless of the absence of an overall directional trend (Tibbett & Ferrari, 2018), so the current cohort is likely statistically similar to earlier cohorts who experienced high rates of procrastination (Ferrari et al., 1995).

In addition to possible cohort effects, there are other indicators of self-regulation failure that help to understand and explain changes over time in procrastination. Procrastination has been described as a fundamental failure to self-regulate (Park & Sperling, 2012; Steel, 2007). Research on self-regulation reveals it is a multifaceted process (le Roux & Parry, 2021) that, when exerted effectively, allows for the self-control needed to inhibit an impulse that conflicts with a subjective desire or goal, such as engaging in planful deliberation to begin a necessary but aversive task, even when more appealing tasks can be undertaken instead (Ferrari & Pychyl, 2012; Senecal et al., 1997). The strength required for effective self-regulation is limited in capacity within the individual (Baumeister, 2018) and allows one to focus awareness beyond the immediate stimuli which is a precursor of self-regulatory behavior (Baumeister & Heatherton, 1996). At the time of publication, his meta-analytic analysis on self-regulatory failure indicated

that other self-regulatory failures such as obesity and excessive personal debt had been increasing since 1982 (Steel, 2007), suggesting a possible recent cohort effect on the self-regulatory failure of procrastination, much like the cohort effect seen concerning procrastination between 1982 and 2003.

The rise in social media consumption among younger consumers may be another example of a cohort effect, helping to explain why these individuals experience greater delays in beginning and completing intended tasks (Hinsch & Sheldon, 2013; Reinecke et al., 2018). This is reasonable to hypothesize, given that mean daily Internet use among those aged 10 to 19 has recently been reported as 3.11 hours (*SD* = 2.59), with a majority using the Internet daily (25.4%) or several times each day (46.0%), and that these behaviors directly related to decreased school performance through an irrational delay of homework or preparing for assessments (Reinecke et al., 2018). Regression analyses within the same study showed that trait procrastination positively correlated with Internet multitasking and inadequately controlled Internet use, further supporting the hypothesis of a cohort effect. Additional recent research among participants aged 18 to 58 demonstrated that Facebook use in particular becomes a viable escape for procrastinators through its entertainment and stress relief values (Przepiorka et al., 2016), which supports similar recent findings that social media use in general provides users a break from distasteful tasks, thereby enhancing subjective well-being (Reinecke et al., 2014). Thus, a correlation and predictive relationship between social media use and procrastination may exist among college students, given the frequency of both behaviors within the current cohort.

Another possible predictor of procrastination in college students may arise from academic entitlement beliefs. Commonly associated with the millennial generation of college students (Kopp et al., 2011), there is an observed trend indicating increasing academic entitlement—a propensity to possess an expectation of academic success without having to assume personal responsibility to achieve this success—among recent cohorts compared with previous cohorts (Chowning & Campbell, 2009; Keener, 2019; Kopp et al., 2011; Wasieleski et al., 2014). The increasing consumer mindset of students (Greenberger et al., 2008) and influences of technology and the media, including Facebook and YouTube, which allow and reinforce self-glorification (Jeffres et al., 2014, have been cited as possible causes of academic entitlement. Underscoring their widespread ability to self-promote made possible through the advent of these and similar forms of social media, the recent concept known as "Generation Me" characterizes this cohort of college students as the most narcissistic and entitled generation thus far (Twenge & Campbell, 2009).

Achievement Goal Orientation and Implicit Theories

Procrastination, often assumed to be a failure of self-regulation (Ferrari & Pychyl, 2012), leads to low achievement motivation (Brownlow & Reasinger, 2000) and disorganization (Howell & Watson, 2007). Thus, achievement goal orientation may be a robust correlate and predictor of procrastination. First conceptualized by Nicholls (1983) and Dweck (1990), goal orientation theory attempts to account for and explain student differences in achievement behavior, noting that such differences are related to self-efficacy beliefs (McKinney, 2014) as well as various motivational, emotional, cognitive, and behavioral outcomes (Pintrich, 2000). More recent conceptualizations resulted in a 2 x 2 achievement goal framework which includes mastery- and performance-based goals according to an approach vs. avoidance paradigm. This newer framework includes mastery-approach goal orientation, where one seeks to learn all there is to learn; mastery-avoidance goal orientation, where one seeks to avoid not learning what one is otherwise able to learn; performance-approach goal orientation, where one seeks to perform better than one's classmates; and performance-avoid goal orientation, where one simply seeks to avoid performing worse than classmates (Howell & Watson, 2007).

Multiple studies have found that goal orientation type determines a student's learning strategies, cognitive and behavioral reactions, satisfaction with the student experience, and educational performance (Ames 1992; Barron & Harackiewicz, 2000; Benita et al., 2014 Roebken, 2007; Valle et al., 2003), yet few known studies have examined the connection between procrastination and the four achievement goal orientations within the 2x2 taxonomy. Negative associations have been found between procrastination and the mastery-approach goals (Seo, 2009), with a positive association found between procrastination and mastery-avoidance goals (Howell & Buro, 2009; Seo, 2009; Valle et al., 2003). Work by Valle et al. (2003) revealed no consistent connection between procrastination and performance-based goals, though prior studies demonstrated positive correlations between procrastination and performance-avoidance goals (Seo, 2009) and, at times, performance-approach goals (McGregor & Elliot, 2002; Wolters, 2004).

Related to achievement goal orientations are implicit theories ("mindset beliefs"), which are important in understanding motivation, learning, and intelligence as these outcomes are subjectively viewed through either a fixed or malleable lens (Dweck, 1999).

Individuals who endorse a fixed ("entity theory") mindset belief perceive that an attribute, such as intelligence, is relatively stable and thus unchangeable. Individuals who endorse a growth ("incremental theory") mindset belief perceive that such an attribute is malleable, and therefore open to influence through effort or practice. Howell and Buro (2009) found that fixed mindset beliefs correlated significantly and positively with procrastination, whereas incremental mindset beliefs correlated negatively. Furthermore, fixed mindset beliefs correlated significantly and negatively with the mastery-approach goal orientation, and positively with all three other goal orientations, further supporting the relatedness of achievement goal orientation and mindset beliefs.

Attitude and Satisfaction With College Life

Based on its documented connection to goal orientation, attitude is another suspected correlate and predictor of procrastination whose role can become further clarified through additional study. Defined as "a settled opinion" and "behavior reflecting this" (Abate, 1999, p. 44), attitude is believed to possess a cognitive and affective component which can lead to the behavioral response (Altmann, 2008). In their measurement of student attitude, Ames and Archer (1988) asked students "How would you rate your liking for this class?" (p. 262) on a 5-point scale. Students who felt encouraged by their instructors to learn for the sake of learning had a more positive attitude toward the class due to the mastery goal orientation approach adopted by these instructors. Combined with the documented negative correlation between procrastination and mastery goal orientation (Valle et al., 2003), a possible connection between procrastination and attitude thus appears reasonable. To assess this, Curtis and Trice (2013) conducted a factor analysis on academic locus of control among college students which identified four factors (hopelessness, distractibility, poor student attitude, impaired planning). Though they did not measure attitude directly, their work supports a plausible relationship between attitude and procrastination, as poor student attitude significantly correlated with academic entitlement and procrastination, further clarifying the connection between student attitude and procrastination.

Although little known work has examined the direct association between student attitude and procrastination, an experimental study assessing student performance and attitudinal differences between a lecture and an online course revealed a negative association between procrastination and attitude among the students who were randomized into the online class, but the same association was not seen for students assigned to the lecture course (Elvers et al., 2003). A strong association was also found between student course satisfaction and procrastination, but this was only true for students assigned to the online course. Additional correlational findings from earlier work on procrastination revealed that college students who perceive greater control over how they structure and manage their time reported significantly greater satisfaction with academic life (Macan et al., 1990). Combined, these findings suggest that procrastination may be predicted, in part, by the attitude college students hold as well as their satisfaction with college life in general.

Purpose of the Present Study

In the present exploratory study, we attempted to identify psychological and behavioral predictors of general procrastination in undergraduates to further the understanding of researchers, educators, and students alike. Much of the prior research done on procrastination has examined its correlates and consequences in adults. The preponderance of research in undergraduates has focused on identifying correlates and consequences of academic procrastination. To bridge a gap between these two areas, the current study was uniquely aimed in its target focus as well as in its target population. Specifically, it identified predictors of general procrastination in undergraduates, thus filling a gap in the existing literature on procrastination among this demographic. Our research was guided by the following question: What are significant psychological and behavioral predictors of procrastination in undergraduates? Based on the documented and plausible correlates and predictors of procrastination in adults and those of academic procrastination in undergraduates, we hypothesized that conscientiousness, self-efficacy beliefs, mastery goal orientation, and attitude toward learning would negatively predict procrastination, and that daily social media usage would positively predict procrastination within the resultant regression model.

Method

Participants

Participants were recruited through class visits, flyers containing the research details, and Sona Research Systems at a medium-sized southwestern university in the United States where data collection took place. Two hundred sixty-seven undergraduate students enrolled in in-person introductory psychology courses were included in the current sample ($N = 267$). Within the sample, 171 participants (64%) were women and 96 (36%) were men. The year-of-study distribution was 119 (44.5%) first-year students (71 women; 48 men), 90 (33.7%) second-year students (61 women; 29 men), 38 (14.2%) third-year students (25 women; 13 men),

and 20 (7.5%) fourth-year students (11 women; 9 men). Demographic data on age and race/ethnicity were not collected. Participants received two credits toward their four required research participation credit assignments.

Procedure

Before conducting the study, approval was granted by the Southern Utah University institutional review board (#23-092015). After voluntarily opting to participate, each participant was provided with the informed consent form, and subsequent survey access was provided through a link to a survey-hosting website. The online self-report survey included 16 psychological variables and one behavioral variable (daily social media usage) to be used in the regression analyses. Student ID numbers were entered at the beginning of the survey to ensure that no student participated more than once. Upon completing the survey (mean completion time = 27 minutes, *SD* = 12.21, range = 117.0), course credit was awarded to each participant who showed proof of completion to the course instructor, and the ID number of the student was removed.

Instrumentation

Procrastination was measured by the Lay Procrastination Scale (Lay, 1986), a 20-item scale consisting of Likert-type responses that measure how characteristic tasks typically associated with procrastination are for the participant (e.g., "I often find myself performing tasks that I had intended to do days before."). Answer items ranged from 1 (*extremely uncharacteristic*) to 5 (*extremely characteristic*) and scores ranged from 20 to 100 with higher scores indicating greater procrastination. Lay (1986) indicated reliability through a Cronbach's α of .82, with a test-retest reliability statistic of .80 (Ferrari, 1989) observed among college samples. In our sample, Cronbach's α of .78 was observed.

Psychological Correlates & Predictors

Big 5 Personality Traits. Traits of extraversion, agreeableness, conscientiousness, neuroticism, and openness were each measured with the Big Five Inventory (BFI-44) by John and Srivastava (1999). Its 44 items, 16 of which are reverse coded, provided statements regarding how the participants views themselves, with responses indicated on a 5-point Likert scale from 1 (*strongly disagree*) to 5 (*strongly agree*). A higher score within a trait indicates greater trait prevalence. BFI-44 test-retest reliability has been demonstrated to be .83 in English-speaking samples (Rammstedt & John, 2006). In our sample, reliability of .70 was observed using Cronbach's α.

Goal Orientation. Achievement goal orientation was measured through the Goal Orientation Scales (Midgley et al., 1998), a 7-point Likert-type inventory that assesses what a student is attempting to accomplish in a course. Answer ratings vary from 1 (*not at all true of me*) to 7 (*very true of me*). The scoring key includes 18 total items, with six items assessing each of the following goal types: task goal orientation (mastery goal orientation), ability-approach goal orientation (performance-approach goal orientation), and ability-avoid goal orientation (performance-avoid goal orientation). Sample statements corresponding to each respective domain above include "I prefer course material that really challenges me so I can learn new things," "It is important to me to do better than the other students," and "I worry about the possibility of getting a bad grade in this class." It should be noted that the Mastery-Avoidance goal orientation is not included on this scale, as this orientation was completely neglected in research on achievement goals until relatively recently (Van Yperen, 2006; Van Yperen et al., 2009). Internal consistency as measured by Cronbach's α for these items has been demonstrated to be above .70 and .80 (Midgley et al., 1998). Our sample demonstrated reliability at .87 using the same metric.

Mindset. The Mindset Survey, adapted by Dweck (2006), was used to assess growth mindset beliefs (e.g. "No matter how much intelligence you have, you can always change it quite a bit.") vs. fixed mindset beliefs (e.g., "Your intelligence is something very basic about you that you can't change very much.") according to implicit theories of intelligence as discussed by Dweck and colleagues (1995). The 20 total items are scored according to a 4-point Likert-scale format (*strongly agree, agree, disagree, strongly disagree*), with scores for each belief type ranging from 10 to 40. Across six studies, such measures have shown very high internal consistency (α = .94 to .98) as indicated in Dweck et al. (1995). Internal reliability in our sample was also high at .94 using Cronbach's α.

Perfectionism. Due to its relationship with procrastination among college students (Burns et al., 2000) and its association with motivation (van Eerde, 2003), particularly motivation among women (Brownlow & Reasinger, 2000), the current researchers measured perfectionism with the 45-item Multidimensional Perfectionism Scale (MPS) by Hewitt and Flett (1991). The MPS assesses self-oriented perfectionism (e.g. "One of my goals is to be perfect in everything I do."), other-oriented perfectionism (e.g., "I have high expectations for the people who are important to me."), and socially prescribed perfectionism (e.g., "My family expects me to be perfect."). For the purposes of our study, a summed perfectionism score from 45 to 315 was computed

and analyzed for each participant. Adequate reliability (Cronbach's α = .88) and validity have been previously demonstrated for the MPS (Hewitt & Flett, 1991). Our sample achieved internal reliability at α = .96.

Academic Entitlement. To measure academic entitlement beliefs, the 45-item Academic Entitlement Questionnaire (Kopp et al., 2011) was utilized. This Likert-type questionnaire included six answer options per item ranging from 1 (*strongly disagree*) to 6 (*strongly agree*). Example items included such statements as "If I don't do well on a test, the professor should make tests easier or curve grades" and "Because I pay tuition, I deserve passing grades." Scores on this questionnaire ranged from 26 to 126 with higher scores indicating greater academic entitlement. Our sample demonstrated acceptable internal consistency through a Cronbach's α of .70.

Self-Efficacy.

General Self-Efficacy. To assess overall confidence in ability successfully accomplish tasks (e.g., "It is easy for me to stick to my aims and accomplish my goals"), the General Self-Efficacy Scale (Schwarzer & Jerusalem, 1995) was administered. Consisting of 10 statements measured through a 4-point Likert-scale format, it asked participants to indicate how true each statement is (*not at all true, hardly true, moderately true, exactly true*), with scores ranging from 10 to 40. Schwarzer and Jerusalem (1995) indicate high internal consistency (Cronbach's α = .82 to .93) within this scale across multiple samples. The current study observed a similarly high internal consistency value of α = .85.

College Student Self-Efficacy. To obtain efficacy data more specific to our sample, the College Self-Efficacy Inventory (CSEI) by Solberg et al. (1993) was administered. This 20-item inventory, measured on a 10-point scale, asked participants to rate their confidence (1 = *not at all confident*; 10 = *extremely confident*) in successfully completing tasks associated with various aspects of college life (making new friends at college, managing time effectively, doing well on exams, etc.). Scores ranged from 20 to 200. Previous work has shown the CSEI to have very high internal consistency through a Cronbach's α of .93 (Solberg et al., 1993). Our sample also demonstrated high reliability (Cronbach's α = .91).

Additional Psychological Predictors. Building on previous work that suggests connections between procrastination and attitude (Ames & Archer, 1998; Curtis & Trice, 2013; Valle et al., 2003) and procrastination and school life satisfaction (Macan et al., 1990), two additional measures created by the principal investigator were included. To examine the connection between procrastination and attitude, a 5-point Likert-scale Attitude Toward Learning item was included which assessed personal level of agreement with the following statement: "I find myself to possess a positive attitude toward learning" (1 = *strongly disagree*, 5 = *strongly agree*). This seeks to determine predictive ability of the negative correlation found between attitude and procrastination among college students (Curtis & Trice, 2013). Additionally, a 7-point Likert-type School Life Satisfaction item was included which assessed level of satisfaction with life as a college student based on the following question: "In general, how satisfied are you with your life as a college student?" (1 = *very dissatisfied,* 7 =*very satisfied*). The measure of school life satisfaction was included to assess predictive ability of the positive correlation found between perceptions of control over time management and satisfaction with school in their sample of college students (Macan et al., 1990).

Behavioral Predictors

To capture behavioral data that we hypothesized would positively predict procrastination, a 5-item social media usage scale was included in the survey. This scale asked participants to indicate the number of daily minutes spent using each of the following sites: Twitter, Facebook, Instagram, Pinterest, Tumblr. Answer options for each site consisted of six ranges of daily time spent on social media: 0 minutes, 1 to 30 minutes, 31 to 60 minutes, 61 to 90 minutes, 91 to 120 minutes, greater than 120 minutes. Results from this scale were reported as a sum of daily hours spent using social media.

Results

Multiple Regression Analysis

A standard multiple regression analysis was performed between the dependent variable and all independent predictor variables, with all 17 predictors analyzed simultaneously. This approach was used as our purpose and research questions were aimed at identifying possible significant predictors and not the "best" predictors, which would have required a different (e.g., forward or stepwise) regression model approach.

Preliminary results indicated no correlations within the independent variables themselves exceeded $r = .70$, satisfying the multicollinearity assumption. Additional assumptions were tested by examining normal probability plots depicting residuals and scatter diagrams of residuals versus predicted residuals. No major violations of normality, linearity, or homoscedasticity of residuals were detected as only one outlier (defined as +/- 3 *SD*) was observed.

Regression analysis revealed that the model significantly predicted procrastination, $F(17, 249) = 14.734$, $p < .001$. Overall r^2 for the model was .50, and adjusted r^2 was .47 indicating a large effect size for the model.

Sufficient power (.81) was obtained, allowing the model to detect true effects. Table 1 displays the intercept of the model, and the unstandardized regression coefficient (B), standardized regression coefficient (β), *t* statistic, and significance (*p*) value for each predictor variable.

The resultant model indicated that two of the psychological variables positively predicted procrastination in our sample of undergraduates: growth mindset beliefs (β = .16, *p* = .003) and academic entitlement beliefs (β = .11, *p* = .023), neither of which was initially hypothesized. The model also identified two psychological variables as negative predictors of procrastination, conscientiousness (β = –.55, *p* < .001) and college student efficacy beliefs (β = –.17, *p* = .011), with conscientiousness demonstrating the strongest predictive influence from the variables included in the regression model. This hypothesized finding was expected based on prior work in this area.

Psychological variables expected to predict procrastination that did not reach significance were mastery goal orientation (β = –.01, *p* = .84) and attitude toward learning (β = .09, *p* = .14). The behavioral variable of daily social media use that was hypothesized to predict procrastination also failed to reach significance (β = –.01, *p* = .82). Additionally, we hypothesized that self-efficacy beliefs would predict procrastination. Although college student efficacy beliefs emerged as a significant predictor as indicated above, general efficacy beliefs did not (β = .09, *p* = .16).

Descriptive statistics between each of the 17 predictor variables and the dependent variable are reported in Table 2. Of the 13 nonsignificant predictors, Pearson *r* values showed procrastination was significantly related to nine of these (three positively, six negatively), with seven of the nine being significant at *p* < .01 as described below.

The three positive correlates of procrastination at *p* < .01 each demonstrated a small effect size. These included attitude toward learning (*r* = .25, *p* < .001), neuroticism (*r* = .24, *p* < .001), and daily social media use (*r* = .19, *p* = .002). Although none of these variables significantly predicted procrastination, there were still significant positive associations between procrastination and attitude toward learning, the Big 5 trait of neuroticism, and daily time spent on social media in our sample of undergraduates.

The four negative correlates of procrastination at *p* < .01 demonstrated medium to small effect sizes and included mastery goal orientation (*r* = –.35,

TABLE 1

Multiple Regression Predicting Procrastination

	Unstandardized B	Standardized β	*t*	*p*
(Constant)	55.16			< .001
Openness	0.05	.03	0.64	.52
Conscientiousness	−1.06	−.55	−9.94	< .001
Extraversion	0.14	.09	1.63	.11
Agreeableness	0.14	.07	1.38	.17
Neuroticism	0.14	.08	1.42	.16
Mastery Goal Orientation	−0.03	−.01	−0.21	.84
Performance-Approach Goal Orientation	−0.09	−.07	−1.33	.19
Performance-Avoidance Goal Orientation	−0.00	-.00	−0.04	.97
Growth Mindset	0.43	.16	3.01	.003
Fixed Mindset	0.27	.11	1.92	.06
Perfectionism	0.00	.00	0.03	.97
Academic Entitlement	0.11	.12	2.29	.02
General Self-Efficacy	0.22	.09	1.42	.16
College Student Self-Efficacy	−0.07	−.17	−2.58	.01
Attitude Toward Learning	0.90	.09	1.47	.14
School Life Satisfaction	−0.10	-.01	−0.28	.78
Daily Social Media Use (hours)	−0.06	-.01	−0.26	.82

TABLE 2

Descriptive Statistics and Correlations With Procrastination for Study Variables

	M	*SD*	*r*	*p* (2-tailed)
Openness	35.32	6.26	−.04	.10
Conscientiousness	32.70	5.45	−.68	< .001
Extraversion	25.60	6.74	−.09	.14
Agreeableness	35.50	5.31	−.15	.023
Neuroticism	24.02	6.31	.24	< .001
Mastery Goal Orientation	34.11	5.28	−.35	< .001
Performance-Approach Goal Orientation	27.36	8.32	−.14	.030
Performance-Avoidance Goal Orientation	31.63	6.58	.06	.35
Growth Mindset	18.01	3.96	.29	< .001
Fixed Mindset	29.96	4.17	−.19	.003
Perfectionism	185.17	12.30	.01	.85
Academic Entitlement	80.63	11.83	.27	< .001
General Self-Efficacy	31.63	4.12	−.27	< .001
College Student Self-Efficacy	143.67	26.99	−.42	< .001
Attitude Toward Learning	2.14	0.99	.25	< .001
School Life Satisfaction	5.02	1.47	−.27	< .001
Daily Social Media Use (hours)	4.48	2.30	.19	.002

$p < .001$), general efficacy beliefs ($r = -.27$, $p < .001$), school life satisfaction ($r = -.27$, $p < .001$), and fixed mindset beliefs ($r = -.19$, $p = .003$). Although none of these three variables significantly predicted procrastination, these findings revealed that higher procrastination was still significantly associated with a lower mastery goal orientation, lower general efficacy beliefs, lower satisfaction with the undergraduate experience, and lower fixed mindset beliefs.

Discussion

The purpose of this exploratory study was to identify psychological and behavioral predictors of general procrastination in undergraduates. The resultant significant regression model accounted for 47% of the variance in procrastination and identified four psychological predictors. Growth mindset beliefs and academic entitlement beliefs were identified as positive predictors, neither of which was included in our initial hypothesis. This key finding about growth mindset beliefs indicates that students who believe attributes such as intelligence to be changeable through deliberate practice are significantly more likely to procrastinate. This is surprising, given that previous research has shown growth mindset beliefs to be negatively correlated with procrastination (Howell & Buro, 2009). The differing findings obtained in our study may be attributed to the nature of growth mindset beliefs themselves, which allow individuals to see themselves as capable of changing due to increased agency over the self. Mandeville et al. (2015) speculate that individuals with greater agency over their self-concept as a result of growth mindset beliefs may likewise feel greater agency over their circumstances and experiences. If true, this implies that students who possess growth mindset beliefs may feel themselves capable of reducing or avoiding undesired behaviors such as procrastination, but simply choose to engage in these behaviors due to their perceived control over their own outcomes. This may help explain our unexpected finding of a significant positive predictive relationship between growth mindset beliefs and procrastination.

The second positive predictor of procrastination among our sample involved academic entitlement beliefs. This key finding reveals that students who feel entitled to receiving good grades or special academic treatment without necessarily having to put forth the effort that warrants such grades or treatment are significantly more likely to procrastinate. This predictive relationship adds to the growing body of knowledge on entitlement beliefs, and further clarifies their connection to procrastination. Procrastination itself includes oppositional behavior and resentment, both of which have been linked with entitlement beliefs (Ellis & Knaus, 1977). Newer research has also revealed that procrastination significantly correlates with anger, revenge, and entitlement beliefs (Ferrari & Emmons, 1994). Thus, the findings of our study strengthen the connection between entitlement beliefs and procrastination by uncovering a significant predictive relationship between academic entitlement beliefs in particular and procrastination in college students. To our knowledge, no work has previously identified or documented this effect.

Conversely, conscientiousness and college student efficacy beliefs were identified as negative predictors, supporting part of our initial hypothesis. These additional key findings reveal that highly conscientious students are less likely to procrastinate, as are students who possess confidence in their abilities to successfully navigate the undergraduate experience through, among other things, effectively managing time, communicating with professors, and earning good assignment and course grades. These findings align with results from prior work in both conscientiousness (Park & Sperling, 2012; Steel, 2007) and academic self-efficacy beliefs (Chow, 2011; Ferrari et al., 1992).

The behavioral variable of daily social media use in our hypothesis did not significantly predict procrastination, but it did significantly positively correlate with procrastination. Past research has shown that procrastinators are inclined to use social media sites such as Facebook to reduce or eliminate the negative affect related with distasteful tasks (McCown et al., 2012), so our correlational findings between these variables were expected. However, the failure of daily social media use to predict procrastination was surprising, particularly when viewed in light of the amount of time each day undergraduates in our study reported engaging in social media ($M = 4.48$ hours, $SD = 2.30$ hours) across the five platforms included in the survey. Reinecke et al. (2018) revealed that trait procrastination was associated with entertaining online content, which included social media as well as online video and online gaming sites. Based on these findings, different forms of online content (social media vs. online gaming, for example) may vary in their ability to predict procrastination. It may also be true that collapsing the five platforms into one measure caused a loss of explanatory precision in our study which may have otherwise allowed for significant predictive effects of a specific social media site to emerge. Additionally, the current study assessed general procrastination as the dependent variable, but it may be that procrastination itself predicts social media use instead. Such results were obtained by Przepiorka et al. (2016) who found that general procrastination is a significant predictor of Facebook use. Thus, although the significant correlation between daily social media use and general procrastination was

seen in the current study, it is possible that no predictive effect emerged due to (a) a failure to capture data on different forms of online content, (b) a loss of precision created by an aggregated measure of daily social media that included five platforms, and/or (c) an incorrect assumption of the direction of effect between daily social media use and procrastination.

Mastery goal orientation also unsuccessfully predicted procrastination, failing to support this component of our hypothesis. Prior work examining the effects of goal orientation on procrastination revealed that mastery-approach goal orientations predict procrastination in college students (Howell & Watson, 2007; Seo, 2009). However, the measure used to assess mastery goal orientation in our study did not separate mastery-approach goals from mastery-avoidance goals, but instead collapsed both mastery goal orientations into a combined set of questions. Specifically, the mastery goal section on the survey consisted of six total questions, whereas the sections on performance-approach goals and performance-avoid goals consisted of six questions each. Therefore, the goal orientation measure used did not allow us to capture the same level of specificity for mastery goals as it did with performance goals. Thus, it is possible that our results would have been more comparable to those of prior researchers had our measure assessed the two types of mastery goals separately. Furthermore, fixed mindset beliefs approached significance ($\beta = .11$, $p = .06$) as a positive predictor of procrastination.

Importance of the Study and Practical Implications

Based on the significant predictors of procrastination identified by our model, four important findings emerged from this study. First, the predictive role of academic entitlement adds a new dimension to the extant literature on predictors of general procrastination in college students. Our findings reveal higher academic entitlement beliefs predict greater procrastination, which supports the conclusions of Kopp et al. (2011) that claim a growing proportion of students expect good grades despite not having to expend much effort in earning these grades. As a result of this trend, it seems reasonable that entitlement beliefs may exist and even persist when students engage in procrastination, yet still expect to receive high marks despite delaying intended courses of action. Baumeister et al. (1994) stated that "Even the most talented students often seem to think that the route to success is less a matter of hard work, good study habits, and meeting deadlines than of doing extra-credit projects, being creative, and circumventing authoritarian rules with clever excuses and well-phrased requests for special treatment" (p. 5). These new and unique findings from the current study may help college professors and higher education administrators to more fully understand similar beliefs and dynamics that form the basis of students' academic entitlement and its subsequent predictive impacts on procrastination.

Second, the role of conscientiousness as a key predictor of procrastination further confirms decades of previous work on this personality trait (Steel, 2007; van Eerde, 2003). Of the four significant predictors identified by our model, conscientiousness demonstrated the greatest association with and impact on procrastination as shown by its associated correlational and beta values, respectively, indicating that lower conscientiousness is associated with—and predictive of—greater procrastination. This is an important and encouraging finding because the trait of conscientiousness can be increased through effort and repeated practice (Javaras et al., 2019), practically implying that college students can lessen procrastination tendencies and the negative outcomes associated with these behaviors through deliberate, repeated practice of self-regulatory processes aligned with conscientiousness (Corker et al., 2012). As many colleges and universities offer or mandate a first-year experience course for freshmen (Gardner & Schroeder, 2003), such curricula should include direct and repeated instruction on goal-directed metacognitive skills and techniques such as planning, organization, time management, and other self-regulatory skills associated with conscientiousness (Pintrich, 2000). Such curricula would specifically provide students opportunities to strengthen these important academic and life skills during their first year of higher education. Skills developed and refined in such conscientiousness-based freshman-year coursework may also lead to improved retention rates, given the consequences of procrastination on academic performance.

Third, the significant predictive effect of college efficacy beliefs on procrastination coincides with previous findings (Haycock et al., 1998; Rabin et al., 2011), as our results similarly show that higher college efficacy beliefs predict lower procrastination. In addition to being able to improve self-regulatory skills associated with conscientiousness during first-year experience courses, students can also benefit through increasing their *confidence* in utilizing these skills (Grunschel et al., 2013), suggesting that focus also be placed on increasing student confidence in the ability to manage the broader college experience. This can occur through helping students identify and access campus- and community-based resources designed to support students as they adjust to, and journey through, an undergraduate learning environment. Tutoring services, campus mental health services, student success and accessibility centers,

writing centers, vocational rehabilitation services, and various academic clubs and organizations are resources that can provide opportunities to strengthen college student confidence in utilizing the self-regulatory skills needed for successfully navigating the undergraduate experience.

Finally, the significant predictive role of growth mindset beliefs diverges from findings of the limited known previous work on implicit theories of intelligence. Howell and Buro (2009) revealed that among 397 undergraduates, entity/fixed mindset beliefs positively predicted academic procrastination whereas a growth mindset emerged as a negative predictor. Our results showed that although fixed mindset beliefs approached significance ($p = .06$) as a positive predictor, growth mindset beliefs significantly positively predicted procrastination. This divergence from previous findings might be attributed to the nature of their chosen measure of procrastination, which is a 16-item scale that measures academic procrastination (Tuckman, 1991) whereas the Lay (1986) scale used in the current study measures general procrastination. Our correlational findings align with those of prior work in which mastery-approach goals were negatively correlated with procrastination (Howell & Buro, 2009; Howell & Watson, 2007; Valle et al., 2003).

Limitations

Despite the strengths associated with the current study, there were several limitations that make generalization of findings somewhat difficult. First, all predictor variables and the dependent variable were measured using a self-report method. Although this approach has commonly been used in most research on procrastination (van Eerde, 2003), participants may have reported inaccurate information. However, data were anonymized, which increased the likelihood that participants provided honest answers on the survey, increasing validity of our results. Regardless, future researchers should create and validate other data collection methods through which to complement the self-reporting scales used here. A second limitation is that our sample included only undergraduates, so any attempt to generalize to nonacademic settings or to other student populations is not possible. A third possible limitation is that students who are more prone to procrastinating may have been over-represented in our study due to personal interest in the topic being researched, thereby skewing our results via selection bias. However, as indicated earlier, no major violations of normality, linearity, or homoscedasticity of residuals were observed, so this type of systematic skew is unlikely to have occurred. Another limitation stems from the use of the two researcher-created scales included in the survey: the Attitude Toward Learning scale and School Life Satisfaction scale. As these were created for use in the current study, neither had been piloted or validated previously, thus possibly rendering these data suspect. Additionally, because the survey was presented in the same order to each participant, our findings may be limited due to carryover, in particular to fatigue effects.

It must also be kept in mind that participant characteristics likely limit the extent to which the current findings can be generalized. Such characteristics include—among others—age, race, and ethnicity, none of which were directly measured in the current study. Although the preponderance of students in the psychology classrooms from which our participants were drawn appeared to be traditional-age undergraduates, there is likely greater variability in age than initially was assumed due to the presence of some non-traditional students who returned to the classroom later in life. Even though these individuals were classified as undergraduates by credit hour status at the time of study completion, their data may diverge from those of the traditional-age undergraduates due to quantitative differences in overall life experience. Additionally, the university from which all participants were drawn historically represents a relatively homogenous racial, ethnic, and religious culture, making our sample perhaps unique, albeit internally more consistent than most universities, in its lack of variability within each of these characteristics. Therefore, it would be unjustifiable to assume that these findings would necessarily be equally true for other communities outside of the sample used here, which came exclusively from one specific university student participation pool.

Future Recommendations

Although gender (Steel, 2007; van Eerde, 2003), age (Howell et al., 2006), ethnicity (Kachgal et al., 2001), and intellectual ability (van Eerde, 2003) have shown no consistent directional relationship with general procrastination across previous studies, future procrastination researchers may wish to include these as possible additional exploratory predictors, as these data were not included in our analyses out of efforts to omit predictors that we did not feel would uniquely contribute to the model based on prior findings. Future researchers in college student procrastination should consider conducting confirmatory analyses to pinpoint which specific predictors identified in the current study contribute the greatest proportion of variance within regression models. Doing so would bring additional clarity to the findings presented in this study by accounting for the variance explained by each unique predictor identified through our exploratory analyses. Additionally, future researchers should conduct similar confirmatory analyses on academic procrastination ("the intentional delay in

the beginning or completion of important and timely academic activities" (Rabin et al., 2011, p. 344) in college students to reveal areas of overlap between general procrastination as was measured in the current study and procrastination behaviors specific to academic tasks.

It has been shown that certain facets of conscientiousness (self-control, order, industriousness, and responsibility) are significantly related to objective health markers (Sutin et al., 2018). To broaden the current understanding of the role and impacts of conscientiousness on general as well as academic procrastination, researchers should assess each of the six identified conscientiousness facets: self-control, order, industriousness, traditionalism, virtue, and responsibility (Costa & McCrae, 1995) to determine which of these lower-order traits that make up the domain of conscientiousness are most predictive of procrastination in these two contexts. As the current study only measured levels of overall conscientiousness as a domain, facet-level analysis would highlight the specific lower-order traits that are best suited for predicting general procrastination as well as academic procrastination.

Finally, future researchers should attempt to clarify the positive predictive connection between growth mindset beliefs and general procrastination, noting that a growth mindset negatively predicts academic procrastination. Additional work may clarify the opposing roles growth mindset beliefs play across these two behavioral domains. Prior work found that goal orientation, particularly mastery-avoidance goals, mediates the relationship between fixed mindset beliefs and procrastination (Howell & Buro, 2009). As the goal orientation measure in the current study did not include mastery-avoidance goals specifically, future work informing this area should focus on the role of mastery-avoidance goals as a way to provide additional explanatory power.

Conclusion

This study contributes to the research on general procrastination in undergraduates through its identification of significant predictors of this behavior, and in doing so broadens the extant body of knowledge on correlates and consequences of general procrastination where much prior focus has been placed. Although the hypothesized predictors of attitude toward learning and daily social media use did not emerge as significant predictors of procrastination, the current findings support previous research examining the predictive influence of conscientiousness, college efficacy beliefs, and mastery goal orientation on procrastination in college students.

Additionally, and perhaps most importantly, current findings highlight the significant predictive effect of academic entitlement beliefs on procrastination in undergraduates, opening the door to future research in which personality, mindset, efficacy beliefs, and goal orientation constructs can be further assessed for their contributions to student entitlement. No known published work has found or documented this predictive effect, so our results in this area are unique and noteworthy. Researchers should continue to study academic entitlement along with the personal qualities, characteristics, beliefs, and social factors that promote entitlement and its resultant impacts on procrastination, as present findings provide emerging evidence that this connection exists and, given recent cohort trends documented by Keener (2019), academic entitlement is likely to be increasingly observed in higher education classrooms.

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