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THE EFFECT OF MOTIVATIONAL INTERVENTION ON COLLEGE STUDENTS IN  
ASYNCHRONOUS CLASSES

by

Abigail Marie Perkins

A thesis submitted to the faculty of The University of Mississippi in partial fulfillment of the  
requirements of the Sally McDonnell Barksdale Honors College

Oxford

May 2023

Approved by

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Advisor: Professor Karen Kellum

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Reader: Professor Joshua Eyler

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Reader: Professor Tom Brady

# EFFECT OF MOTIVATIONAL INTERVENTION

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## ABSTRACT

Procrastination is one of the most common behaviors that interfere with student success (Liu et al., 2020). It affects student performance and has long-lasting effects on motivation. Several studies have shown that motivational interventions can reduce procrastination levels (Liu et al., 2020). Goal setting has been particularly successful (Grunschel et al., 2016; Liu et al., 2020; Schwinger et al., 2009). The present study is focused on the evaluation of whether proximal goal setting will affect academic procrastination in an online, asynchronous class. Seventy-eight undergraduate students enrolled in such a class were invited to participate in this study. Participants were randomly assigned to two groups. Group A was the intervention group that received a motivational video and instructions on how to complete a S.M.A.R.T. Goal Worksheet via email prior to the beginning of the semester. Group B was the waitlist control group, and received the same intervention part-way through the semester. Both groups received a procrastination scale to complete prior to the beginning of the semester. Measures included grades, assignments completed on time, S.M.A.R.T. Goal Worksheet completion, and procrastination scale measures. The results indicated no differences between the groups on the number of assignments completed nor on the number of points earned. Additionally, no relationship was found between the procrastination scale and other measures. The authors discuss limitations and suggestions for future research.

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## Introduction

Undergraduate students encounter a number of academic setbacks throughout their academic career. Students can become motivated to use the educational opportunities that are presented to them after errors that cause a decrease in academic success (Onwuegbuzie and DaRos-Voseles, 2001, as cited by Jiao et al., 2011). Study techniques, attendance in class as well as extracurricular support opportunities, and reflection on issues that caused the decreased success are common tools applied after this decrease (Johnson, Johnson, and Smith, 1991, as cited by Jiao et al., 2011). Procrastination is a leading cause of decreased academic success in college students (Fritzsche et al., 2003; Kachgal et al., 2001, as cited by Jiao et al., 2011), and timeliness in completion is not often improved upon after a decrease in success (Jiao et al., 2011).

Procrastination is prevalent in college campuses, with an estimated 95% of students participating in procrastination-related activities (Ellis and Knaus, 1977, as cited by Jiao et al., 2011). In a study in the *Affective, Cognitive, and Behavioral Differences Between High and Low Procrastinators* (Solomon and Rothblum, 1986), 46% of students said to have “nearly always or always procrastinated on writing a term paper” (Rothblum et al., 1986, p. 387). Gallagher, Golin, and Kelleher (1992) discovered that 52% of students reported having a moderate to high need for support to reduce procrastination (Gallagher et al., 1992). Procrastination comes with complex cognitive, affective, and behavioral components (Bandura, 1993, as cited by Liu et al., 2020). Short term benefits tend to be the choice of procrastinators, seeing as these initial benefits exceed and outweigh the negative effects that follow later on (Gospel and Steel, 2008, as cited by Liu et al., 2020).

Procrastination is defined as the “act or habit of procrastinating, or putting off or

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delaying, especially something requiring immediate attention” (*Procrastination Definition & Meaning* | *Dictionary.Com*, n.d.). It is known to cause negative effects on student performance, yet students still continue to delay their assignments (Stead et al., 2010). These negative effects include, but are not limited to, negative emotions, decreases in academic performance (Stead et al., 2010), social achievements, as well as subjective well-being (Gueorguieva, 2011), lower academic self-esteem, and feelings of academic pressure (Klassen et al., 2010; Romano, 1996). Lower learning efficiency and heightened levels of anxiety and depression are also linked to procrastination (Klibert et al., 2016; Krispenz et al., 2019, as cited by Liu et al., 2020).

Zhang and Feng (2017) suggested that procrastination is related to both self-control and utility assessments (Liu et al., 2020). Self-control is seen as a top-down processing mechanism (Belisle et al., 2022). Attentional processing can be described as how an individual reacts to features in the environment that instigate or elicit attending behaviors (Greenway & Plaisted, 2005; Hopfinger et al., 2000; Weissman et al., 2002, as cited by Belisle et al., 2022). Previous studies suggest that top-down processing is a prominent mechanism in which individuals control selective attention (Hopfinger et al., 2000; Shomstein et al., 2010; Kim et al., 1999, as cited by Belisle et al., 2022).

Top-down processing refers to how knowledge, expectations, or past experiences shape the interpretation of sensory information (Gazzaniga, Heatherton, & Halpern, 2016, as cited by Gaspelin & Luck, n.d.). Top-down processing is often implemented in the use of self-control, due to the fact that self-control commonly applies top-down processing to regulate individual behavior (Zhang and Feng, 2017, as cited by Liu et al., 2020). Increased self-control can reduce procrastination levels. Academic self-control can be described as “an individual’s ability to adjust learning behavior in order to achieve a goal in academic development, with the individual’s body, mind, behavior, external environment, and events as objects, and social requirements and self-concept as the standards” (Zhang, 2006; Duckworth et al., 2019, as cited by Liu et al., 2020). Academic self-control employs the use of utility assessments conducted by the individual, which refers to an individual comparing the expected outcome of the situation versus

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the expected negative processes required to accomplish the task (Duckworth et al., 2019, as cited by Liu et al., 2020). When an academic process is expected to cause a negative experience while performing the task, and the outcome does not seem to be greater than these negative experiences, the individual may choose to delay the task (Zhang and Feng, 2000, as cited by Liu et al., 2020). That is, procrastination occurs.

### ***Ways to Reduce Procrastination***

**Emotional Regulation.** Emotional regulation is known as “a set of processes and strategies by which individuals influence their affective states or particular emotions” (Gross, 1998; Gross, 2008; Gross & Thompson, 2007). It is important to note that there is a significant correlation between emotional regulation and motivational regulation related to academic student success (Reindl et al., 2018). An emotional or motivational regulation strategy can be defined as a “purposeful, deliberate, and effortful procedure that individuals use to influence their emotional experience and motivation” (Wolters, 2003; Zimmerman & Martinez-Pons, 1986, as cited by Reindl et al., 2018). Using motivational regulation strategies has the potential to impact the emotional states and effectiveness of emotion regulation in students, which in turn may have an effect on student motivation (Schunk, Pintrich, & Meece, 2008; Rothermund & Elder, 2011; Pekrun, Goetz, Titz, & Perry, 2002, as cited by Reindl et al., 2018).

Although there is limited research into the field of emotional regulation / emotional regulation strategies directly related to academic performance, results suggest that emotional regulation may be an effective motivational regulation strategy (Wolters, 2003). Emotional regulation, in the context of academic success, can be defined as “students’ ability to regulate their emotional experience to ensure that they provide effort and complete academic tasks” (Wolters, 2003). When students encounter issues with their current status of motivation, learning, and performance following academic mistakes, employing emotional and motivational regulation strategies can be important (Wolters, 2003). Following a setback, students are inclined to make use of more than one strategy in order to manage recent setbacks that are caused by errors (Gross, 2015; Reindl et al., 2018; Wolters, 2003).

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**Motivational regulation.** Motivational regulation is known as “the activities through which individuals purposefully act to initiate, maintain, or supplement their willingness to start, to provide work toward, or complete a particular activity or goal” (Wolters, 2003). Studies have suggested that motivational regulation is a powerful positive predictor of academic success rates as well as positive affects (Kryshko et al., 2022). Through an individual’s ongoing motivational or self-regulation level and their usage of motivational strategies, individuals play a crucial role in impacting their personal motivational states (Kryshko et al., 2022; Wolters, 2003). When learners’ motivational regulation is successful, learners can expect to see enhanced levels or types of their current motivation, which can be expressed through cognitive (e.g., increased task value) or behavioral manifestations (e.g., more effort put into task completion) (Kryshko et al., 2022; Wolters, 2003).

Previous research suggests that learners differ in quality and quantity of their motivational regulation strategies, and that both quality and quantity are necessary to support effective action in academic learning situations (Kryshko et al., 2022; Schwinger et al., 2009; Wolters, 2003). In order to uphold task engagement and motivation, students apply varying motivational regulation strategies (Boekaerts, 2006; Gross, 1998; Schwinger, Steinmayr, and Spinath, 2009; Wolters, 1998, as cited by Reindl et al., 2018). Some students choose emotion-focused coping (Lazarus, 1993, as cited by Reindl et al., 2018), while others choose procedures to redirect attention and learning tasks to master a goal (Boekaerts, 2006; Kuhl, 2000, as cited by Reindl et al., 2018). Using one or more strategies can enhance learners’ effort, expenditure, and perseverance of a task or can change the nature of motivational experiences which allows students to have an improved response when dealing with difficult or strenuous task demands (Gehle et al., 2023).

**Motivational Strategies.** A motivational strategy can be defined as “a purposeful, deliberate, and effortful procedure that individuals use to influence their motivation” (Wolters, 2003; Zimmerman & Martinez-Pons, 1986, as cited by Reindl et al., 2018). The use of these strategies is key in the regulation of motivation, as these strategies are designed to control and

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enhance motivation (Grunschel et al., 2016; Wolters, 2003). Such strategies have been demonstrated to improve behavioral modes of motivation; for example, task persistence, decreased behaviors related to negative academic performance, and increased favorability of affective states have all been shown to be altered through the use of motivational strategies (Zimmerman and Schunk, 2008, as cited by Grunschel et al., 2016).

Kwok and colleagues (2022) described eight different motivational strategies developed by Wolters (2003) (Kwok et al., 2022; Wolters, 2003). The strategies can be divided into three categories that represent the technique through which the strategies are expected to improve individuals' task-related motivation (Schwinger et al., 2009). The first of these categories is strategy of interest enhancement, which encompasses enhancement of situational interest and enhancement of personal significance (Schwinger et al., 2009). The second category is strategy of operation through goal-oriented self-instruction, in which the strategies of mastery self-talk, performance-approach self-talk, and performance-avoidance self-talk are featured (Grunschel et al., 2016; Schwinger et al., 2009). The final category, strategies on learning processes that have proven to have favorable effects on motivation, comprises the setting of proximal subgoals, environmental control, and self-consequation (Grunschel et al., 2016; Schwinger et al., 2009).

***Strategies of Interest Enhancement.*** Strategies focused on enhancing interest consist of the enhancement of situational interest, and the enhancement of personal significance (Schwinger et al., 2009). The enhancement of situational interest is achieved by transforming a seemingly boring task into one that is more exciting and enjoyable (Kwok et al., 2022). This is completed by using imagination and short-term modification of the situation to heighten interest; for example, an individual may use differing colors to highlight a lengthy section of text by allowing the reading and copying to be more pleasurable (Schwinger and Otterpohl, 2017, as cited by Kwok et al., 2022). Specifically, situational interest can be heightened when offering meaningful choices to students, using well-organized texts, utilizing vivid texts, discussing topics in which students have prior knowledge, or encouraging students to be active learners (Schraw et al., 2001). Situational interest is useful in attaining students' attention (Krapp et al., 1992, as

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cited by Schraw et al., 2001), and tends to increase learning in situations where the task / information is novel or when the information is relevant to a task / learning goal (Hidi, 1990; Schraw and Dennison, 1994; Shirey, 1992, as cited by Schraw et al., 2001). The enhancement of personal significance is achieved through the establishment of relations between the task and one's personal interests (Grunschel et al., 2016). This method of enhancement aims to form a connection between the task and personal interests in order to establish task meaningfulness (Leutner, Barthel, & Schreiber, 2001; Kryshko et al., 2020, as cited by Kwok et al., 2022). Personal significance is important in holding one's attention, unlike situational interest (Hidi and Baird, 1986; Mitchell, 1993, as cited by Schraw et al., 2001). Personal significance is applied when students feel that information has an increased value to any personal goals or life experiences (Schraw et al., 2001).

***Strategies of Operations Through Goal-Oriented Self-Instructions.*** Strategies focused on operations through goal-oriented self-instructions consist of mastery self-talk, performance-approach self-talk, and performance-avoidance self-talk (Schwinger et al., 2009). Mastery self-talk is achieved through telling oneself that their competence and knowledge can be increased, and includes all goal-oriented self-verbalizations associated with mastering a goal (Grunschel et al., 2016; Lohbeck & Moschner, 2022). Typically, this involves students highlighting and remembering a specific goal in order to achieve the goal (Kwok et al., 2022). Mastery self-talk may lead to increased academic engagement through a variety of processes including changes in learning approaches and higher effort expenditure (Wang et al., 2017). Adaptive help seeking, persistence, and preference for challenging tasks are common behaviors associated with mastery self-talk (Ho and Hau, 2008; Ng, 2000; Shi et al., 2001, as cited by Wang et al., 2017). This form of self-talk tends to be adaptive, yet results suggest that it has direct positive and negative effects on academic engagement and achievement (Ho and Hau, 2008; Ng, 2000; Shi et al., 2001, as cited by Wang et al., 2017).

Performance-approach self-talk is achieved through highlighting the significance of learning outcomes (Grunschel et al., 2016). Performance-approach emphasizes one's ability

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compared to others, with students acquiring motivation through a desire to be more successful than others (Reindl et al., 2018; Schwinger et al., 2009). However, this version of self-talk has been associated with cheating, disruptive behaviors, avoidant help seeking, self-handicapping, and self-regulation (Elliot and McGregor, 2001; Shim and Ryan, 2005; Zusho et al., 2005, as cited by Wang et al., 2017). Studies focusing on performance-approach goals have thus far produced mixed outcomes (Ho and Hau, 2008; Chan, 2008, as cited by Wang et al., 2017). Performance-avoidance self-talk is achieved through the emphasis on one to not embarrass oneself due to poor academic performance (Grunschel et al., 2016). Performance-avoidance goals have yielded results of self-handicapping, disruptive behaviors, and task disengagement (Elliot, 2005, as cited by Wang et al., 2017). Such goals have been connected to deep and surface approaches, achieving approach, and higher effort expenditure (Ho and Hau, 2008; Ng, 2000, as cited by Wang et al., 2017). One utilizing performance-avoidance strategies tends to avoid thinking about poor academic performance or academic failures, causing low academic performance (Grunschel et al., 2016; Kwok et al., 2022). Due to this, performance-avoidance self-talk has been found to be maladaptive, and even increase procrastination in students (Grunschel et al., 2016; Wang et al., 2017).

### ***Learning Processes Strategies with Demonstrated Favorable Motivational Effects.***

Strategies that focus on learning processes that have shown to have favorable effects on motivation include environmental control, self-consequation, and setting proximal subgoals (Schwinger et al., 2009). Environmental control is achieved through a successful arrangement of the work environment, thus allowing one to focus more directly on the behaviors leading to the goal (Grunschel et al., 2016). A beneficial environment grants one to sustain and maintain motivation perseverance in the academic realm (Kwok et al., 2022). For example, a student is more in control of their learning surroundings when they are in a quiet area, or a designated study room (Wolters, 1999, as cited by Lohbeck & Moschner, 2022). The key emphasis of this strategy is cultivating and preserving a learning environment that maintains motivation and persistence (Zimmerman and Martinez-Pons, 1986, as cited by Schwinger et al., 2009).

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Self-consequation involves granting rewards in response to favorable study behavior, which in turn heightens chances of the behavior to occur again (Grunschel et al., 2016). Various researchers have demonstrated that this strategy increases the use of successful learning behaviors (Schwinger and Otterpohl, 2017, as cited by Kwok et al., 2022; Schwinger et al., 2009). Self-consequation differs vastly from other motivational strategies, as it focuses on the direct consequences of academic behavior, whether it be a reward or a punishment (Zimmerman and Pons, 1986, as cited by Lohbeck & Moschner, 2022). Self-consequating strategies also may increase self-regulation, as students execute personal consequences for their academic behaviors (Corno and Kanfer, 1993; Kuhl, 1985; Purdie and Hattie, 1996; Pintrich, 1986; Zimmerman and Martinez-Pons, 1990, as cited by Wolters & Rosenthal, 2000). Research has suggested that the combination of proximal subgoals and self-consequation contribute to increased motivation and completion of long-term goals (Wolters, 2003, as cited by Schwinger et al., 2009).

The strategy of setting proximal subgoals refers to regulating one's motivation through subgoals that one can attain with less effort than longer term goals (Grunschel et al., 2016). Students can divide complex tasks into smaller, more easily attained goals in order to increase feelings of self-efficacy (Bandura and Schunk, 1981, as cited by Kwok et al., 2022). A study conducted by Grunschel and colleagues comparing multiple motivational strategies concluded that the setting of proximal subgoals has the most effective impact on students (Grunschel et al., 2016). These researchers suggested that setting subgoals were an effective method to reduce procrastination because the process focuses on short-term attainable goal pursuit (Krause and Freund, 2014, as cited by Grunschel et al., 2016). Instead of attempting to accomplish one long-term goal, splitting it into smaller subgoals triggers feelings of success in a shorter period of time than initially expected which, in turn, potentially reduces anxiety associated with failure (Krause and Freund, 2014; Pham and Taylor, 1999, as cited by Grunschel et al., 2016). Past and current research has shown a significant negative correlation between procrastination and proximal goal setting, causing researchers to conclude that



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subgoals is a successful strategy for cultivating motivation and diminishing procrastination in students (Lay and Schouwenburg, 1993; Schwinger and Stiensmeier-Pelster, 2012, as cited by Grunschel et al., 2016).

### ***Current Study***

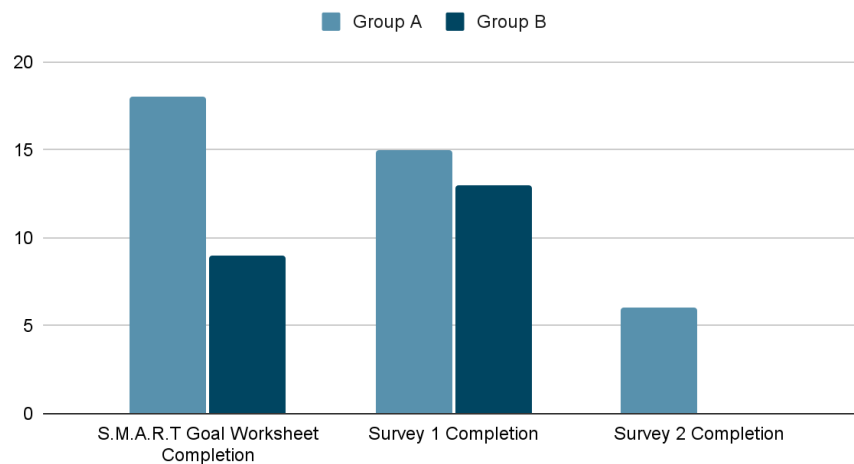
Procrastination is one of the most common behaviors that interferes with student success (Liu et al., 2020). Procrastination can affect student performance and longer-term motivation to persist in academic endeavors. Several studies have shown that motivational interventions can positively impact procrastination levels (Liu et al., 2020). Of such interventions, goal setting has been particularly successful (Grunschel et al., 2016; Liu et al., 2020; Schwinger et al., 2009). The present study focused on an evaluation of the impact of proximal goal setting on academic procrastination. This project explored the following questions: Does a motivational email intervention impact student procrastination in an online asynchronous class? Are feelings of self efficacy (as measured by the Tuckman Procrastination Scale, see Appendix A and Appendix B) related to student performance?

## Methods

### *Participants*

Seventy-eight undergraduate students enrolled in an online, asynchronous 300-level class offered at a large Southeastern University by an experienced online instructor during Spring 2022-2023, were invited to participate in this study. Students were primarily classified as sophomores to seniors at the University of Mississippi, with the age range between nineteen and twenty-three. They were provided a consent letter, and awarded extra-credit points in exchange for their participation. All students participated voluntarily in the fully online study. Students were randomly assigned to two groups, an Intervention group (Group A) and a waitlist-control (Group B). There were thirty-two students in the Intervention group, and forty-eight in the waitlist-control group. In total, of the seventy-eight students prompted to participate in this study, twenty-seven students completed in the S. M. A. R. T. Goal Worksheet (see Appendix C) and thirty-four students completed the survey distributed to them.

Participant Data



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Table 1.

Table 1 illustrates the number of participants that completed the S. M. A. R. T. Goal Worksheet and the Procrastination Scale and General Self-Efficacy Scale. Participant data is divided into Group A (Intervention) and Group B (Waitlist Control).

### **Measures**

**Grades.** Blackboard grades most of the assignments using multiple choice and fill-in-the-blank. Some assignments (e.g., discussion guides) are graded by Teaching Assistants using a rubric. The instructor provided training for the graders on the use of the rubric and continued training until agreement was above 90%. Grades in this course are based on a point system (i.e., the higher number of points a student has equals a higher grade in the course). Grades from the course management system were downloaded at the end of the fourth week of the course (i.e., only assignments due up to this point were used for analysis). No identifying information was used in this process.

**Number of Assignments Completed.** The course management system automatically records the number of assignments that students submit in a course. The number of assignments were downloaded at the end of the fourth week of the course (i.e., only assignments due up to this point were used for analysis). This includes all quizzes, exams, projects, and discussion posts that were due either prior or during the fourth week. No identifying information was utilized in this process.

**Completion of S. M. A. R. T. Goal Worksheet.** The S.M.A.R.T. Goal Worksheet contained four pages of instructions and two pages of fill-in-the-blank questions for students to complete. The first and second pages of the Worksheet described what characterizes a S.M.A.R.T. Goal, and provided sample questions for students to use when constructing their own S.M.A.R.T. Goal. The third and fourth pages of the Worksheet consisted of a sample S.M.A.R.T. Goal that was formatted identically to the S.M.A.R.T. Goal template that students were to fill in. The fifth and sixth pages of the Worksheet contained a blank S.M.A.R.T. Goal Worksheet for students to complete with their own S.M.A.R.T. Goal. Two research assistants blind to group membership examined the submitted S.M.A.R.T. Goal Worksheets. The primary

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research assistant marked each Worksheet as either not complete, partially complete, or complete. The Worksheet was considered completed if students fully filled out the seven questions on the Worksheet and if students seemed thoughtful in their responses. The Worksheet was considered partially completed if responses did not seem well thought-out, or if any of the seven questions were not fully answered. The Worksheet was considered not complete if students did not submit the Worksheet within the allotted two weeks. A secondary observer examined 8 of the twenty-seven submitted Worksheets (29.6%) and the inter-observer agreement was 100% for these.

**Procrastination Scale & General Self-Efficacy Scale.** We provided opportunities for participants to complete two scales. The full version of the Tuckman Procrastination Scale (1991) included 35 items in a 5 point Likert-like scale (see Appendix A) (Tuckman, 1991). This scale has shown to have good psychometrics in a number of student populations, including English speakers (Özer et al., 2013). In a study published in 2013, 858 college students completed the Tuckman Procrastination Scale, along with two other self-efficacy scales (Özer et al., 2013). The Tuckman Procrastination Scale scores in this study correlated negatively with academic self-efficacy and self-esteem scores and demonstrated both validity and reliability (Özer et al., 2013). Additionally, a General Self-Efficacy Scale was included in the procrastination survey given to students (Jerusalem & Schwarzer, 1979). This survey consisted of ten items in a 5 point Likert-like scale (see Appendix B). This scale has shown to have good psychometrics in a number of student populations, including English speakers . Validity of the General Self-Efficacy Scale is documented in several studies in which positive coefficients were associated with favorable emotions, dispositional optimism, and work satisfaction, and negative coefficients were associated with depression, anxiety, stress, burnout, and health complaints (The General Self- Research Publications on Perceived Self-Efficacy, n.d.). This class regularly involves surveys of student perceptions about their own learning; therefore, the addition of these scales likely went unnoticed by students.

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### **Procedures**

**Intervention Group.** Group A received an announcement distributed through Blackboard with a video from the PI attached. The announcement was delivered to the students in the intervention group approximately three days before the course began. In Group A's video, students received access to a video introducing the PI, her role in the class, and how she is excited for them to be enrolled for the semester. The video included information regarding the class, such as reminders of when the course begins and when the drop date is. The video also included information regarding how to succeed in the course, which assignments tend to be the most difficult based on past student success, and how important time-management is in order to succeed. The video gave students goal-setting motivation intervention methods, and instructed them to complete a worksheet of S.M.A.R.T. goals alongside the syllabus quiz. That is, the video exhibited the motivational intervention strategy of the enhancement of personal significance. Students in Group A received the S.M.A.R.T. Goal Worksheet within twenty-four hours of the course commencing, and were instructed to submit the worksheet approximately one week from the date received. At the second week of the course, this deadline was extended to the following week, which allowed additional time for students to complete the Worksheet. At the third week of the course, no other submissions of the S.M.A.R.T. Goal Worksheet were accepted from students in Group A.

**Waitlist Control Group.** Group B initially received a separate announcement that was text only, no video attachment, and this message was brief, with no motivational interventions included. Group B's announcement functioned to solely inform Group B that the course began soon and they must be prepared to get to work. Group B were not initially provided an opportunity to complete the S.M.A.R.T. goal sheet. They were not initially notified of the motivational regulation strategy of setting of proximal subgoals, or of the S.M.A.R.T goal worksheet. The announcement was delivered to students approximately twenty-four hours prior to the course beginning.

As the researchers expected the motivational intervention to have positive results, the

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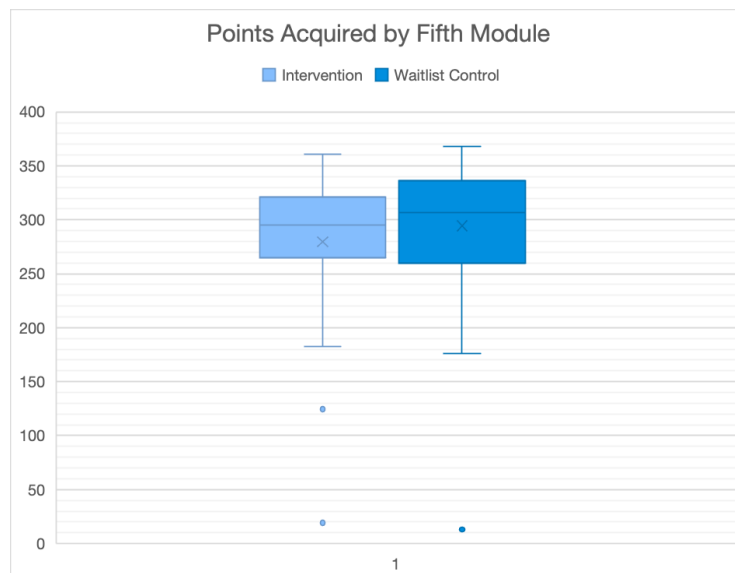
treatment was provided to Group B approximately five weeks into the semester. At the end of the fifth week of the course, Group B was sent information about motivational strategies and given the opportunity to complete the S.M.A.R.T. goal sheet. Group B received a similar video to Group A, except that Group B's video did not include an introduction to the course; instead, Group B's video included a message detailing how the PI hoped that the course was going well so far. Group B's video also included tips provided from the instructor on how to succeed in the course, as well as which assignments tend to be the most difficult for students. It also included information about assignments that students should focus on most in order for successful completion of the course. All of the tips and information provided to Group B was the same as the information given to Group A. The video exhibited the motivational intervention strategy of the enhancement of personal significance. Group B was also introduced to the idea of the setting of proximal subgoals, and what a S.M.A.R.T. Goal Worksheet is. Group B was sent the S.M.A.R.T. Goal Worksheet that Group A received five weeks prior, and was given the same seven-day deadline as Group A. After seven days, the deadline for submission of the S.M.A.R.T. Goal Worksheet was extended another seven days (i.e., Group B was allotted two weeks to complete the S.M.A.R.T. Goal Worksheet).

**Procrastination Scale and General Self-Efficacy Scale.** All students received an optional procrastination survey to complete in exchange for extra credit in the course. The survey was sent to students within twenty-four hours of the course beginning, and students were instructed to submit the survey within one week. This deadline was extended to students, and students were ultimately given two full weeks to complete the survey. Students in Group A received this survey a second time at week four of the course. Students in Group A were allotted one week to complete the survey. Students in Group B did not receive the survey a second time.

## Results

### Grades

The total number of points accumulated from all students by the end of week 4 ranged from 13 to 368. The total number of points accumulated in the Intervention group ranged from 19 to 361, while the total number of points accumulated in the Waitlist Control group ranged from 13 to 368. The median number of points for the Intervention was 295, whilst the median for the Waitlist Control was 306.5 (see Figure 1 for box plots). The data contained two outliers in the Intervention group and one in the Waitlist Control group. The interquartile range for the Intervention group was 56, while the interquartile range for the Waitlist Control group was 77. The Intervention group had a smaller range and interquartile range when compared to the Waitlist Control group, which shows that the Intervention group had more consistent data. Neither visual inspection nor the Student's T-Test (.34) showed a difference in the groups for the number of points acquired.



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Figure 1.

Figure 1 illustrates box plots of the number of points acquired by the fifth week of the course. The data from the Intervention and Waitlist Control is separated, with the Intervention being in light blue and the Waitlist Control being in dark blue.

### ***Number of Assignments Completed.***

The total number of assignments completed by the fifth module from all students ranged from 2 to 29. Only assignments that were completed either prior or on the due date were applied for analysis. The total number of assignments completed in the Intervention group ranged from 2 to 29, while the total number of assignments completed in the Waitlist Control group ranged from 4 to 29. The median number of assignments completed by the Intervention group was 25, whilst the median for the Waitlist Control was 26 (see Figure 2 for box plots). The data contained two outliers in the Intervention group and one in the Waitlist Control group. The interquartile range for the Intervention group was 3, while the interquartile range for the Waitlist Control group was 4. Neither visual inspection nor the Student's T-Test (0.39) showed a difference for the groups in terms of the number of assignments completed by the fifth module.

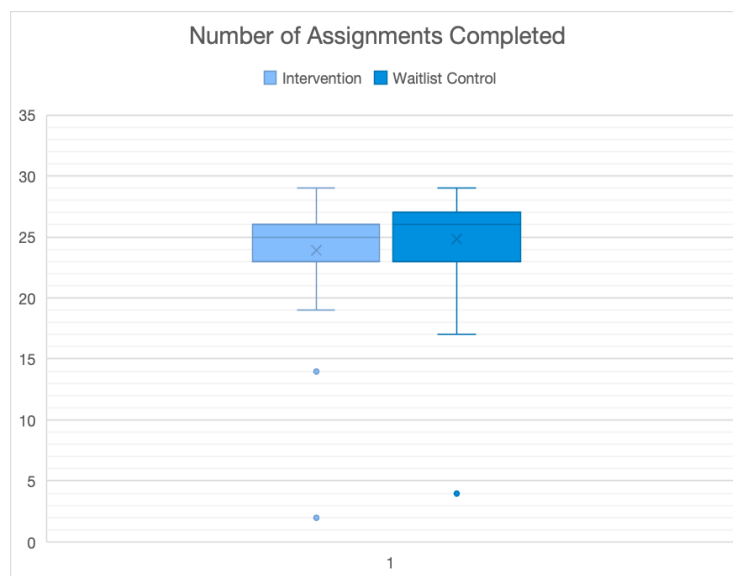


Figure 2.

Figure 2 illustrates box plots of the number of assignments completed by the fifth week of the course. The data from



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the Intervention and Waitlist Control is separated, with the Intervention being the left value, and the Waitlist Control being the right value.

### ***Completion of S.M.A.R.T. Goals Worksheet***

Twenty-seven students fully completed the S.M.A.R.T. Goal Worksheet, with eighteen students in the Intervention group and nine in the Waitlist Control group.

**Total Number of Points Acquired.** The total number of points acquired by students in the Intervention group who successfully completed the S.M.A.R.T. Goal Worksheet ranged from 256 to 361, while the total number of points acquired by students in the Waitlist Control group ranged from 13 to 368. The median number of points acquired by students in the Intervention group who successfully completed the S.M.A.R.T. Goal Worksheet was 297.75, while the total number of points acquired by students in the Waitlist Control group was 306.5 (see Figure 3 for box plots). The data contained no outliers identified in the Intervention group and one outlier in the Waitlist Control group. The interquartile range for students in the Intervention group who successfully completed the S.M.A.R.T. Goal Worksheet was 46.4, while the interquartile range for students in the Waitlist Control group was 77. Students in the Intervention group who successfully completed the S.M.A.R.T. Goal Worksheet had a smaller range and interquartile range when compared to students in the Waitlist Control group, which shows that students in the Intervention group who successfully completed the S.M.A.R.T. Goal Worksheet had more consistent data. Neither visual inspection nor the Student's T-Test (0.31) presented a significant difference in the groups for the total number of points accumulated.

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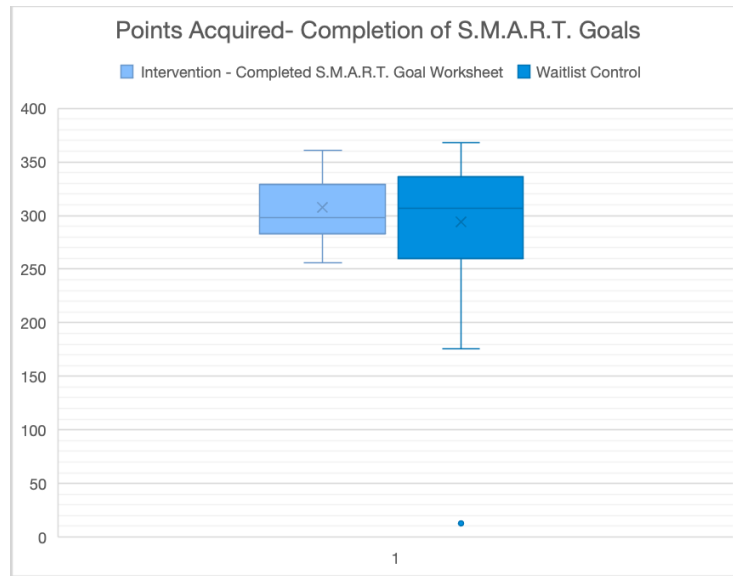


Figure 3.

Figure 3 illustrates box plots of the data comparison of points accumulated by the fifth week of the course. Points accumulated by students in the Intervention group that completed the S.M.A.R.T. Goal Worksheet were compared to points accumulated by all students in the Waitlist Control group.

**Total Number of Assignments Completed.** The total number of assignments completed by students in the Intervention group who successfully completed the S.M.A.R.T. Goal Worksheet ranged from 23 to 29, while the total number of assignments completed by students in the Waitlist Control group ranged from 4 to 29. The median number of assignments completed by students in the Intervention group who successfully completed the S.M.A.R.T. Goal Worksheet was 25.5, while the median for students in the Waitlist Control group was 26 (see Figure 4 for box plots). The data identified no outliers in the Intervention group and one outlier in the Waitlist Control group. The interquartile range for students in the Intervention group who successfully completed the S.M.A.R.T. Goal Worksheet was 2.75, while the interquartile range for students in the Waitlist Control group was 4. Neither visual inspection nor the Student's T-Test (.51) showed a difference in the groups for the number of assignments completed.

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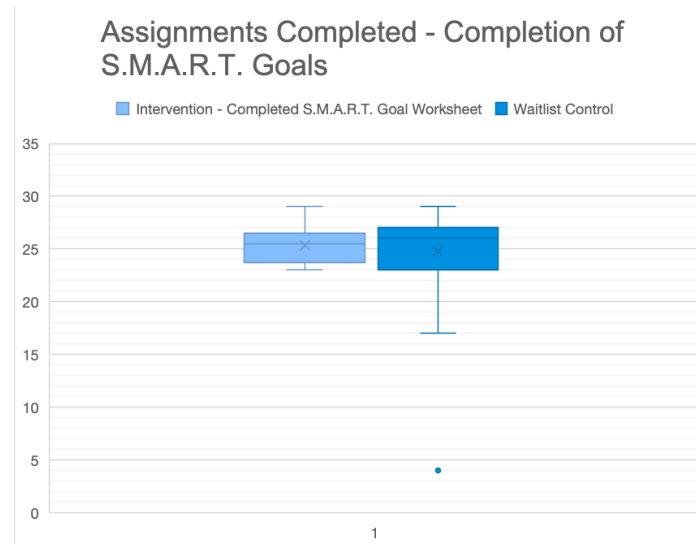


Figure 4.

Figure 4 illustrates box plots of the data comparison of assignments completed by the students in the Intervention group that completed the S. M. A. R. T. Goal Worksheet versus all students in the Waitlist Control group.

### ***Procrastination Scale and General Self-Efficacy Scale***

Thirty-four students completed the survey, with twenty-eight students completing the survey upon the first dispersal and six in the intervention group completed the survey upon the second dispersal. As so few students completed the survey twice, a comparison of these the scale scores between time one and two was not feasible. Overall, the majority of students in both groups scored at levels indication high levels of procrastination. This includes the majority of students that had completed over twenty assignments and those with more than 300 points (i.e., processing well in the class).

**Total Number of Points Acquired and Survey Scores.** The scores on the Procrastination Scale and General Self-Efficacy Scale for all students ranged from 38 to 150. Students in the Intervention group recorded survey scores ranging from 38 to 146, while students in the Waitlist Control group recorded survey scores ranging from 109 to 150. The median survey score of students in the Intervention group was 124, and the median survey score of students in the Waitlist Control was 128. The correlation between the number of points

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earned and the survey for the Intervention group was very low ( $r^2=0.03$ ) as was the relationship for the Waitlist Control group( $r^2=0.003$ ). The data contained two outliers for the Intervention group, and no outliers for the Waitlist Control group (see Figures 5 and 6 for scatter plots). Neither visual inspection nor the coefficient of determination showed a relationship between survey scores and total number of points acquired in either group.

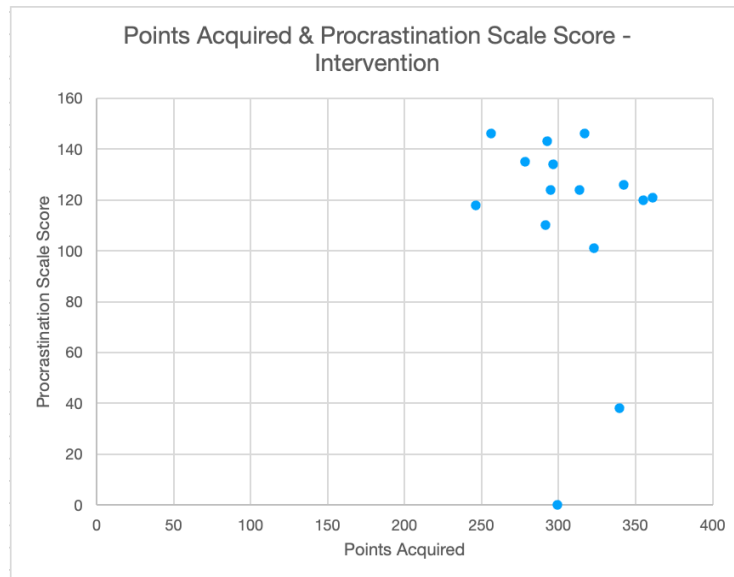
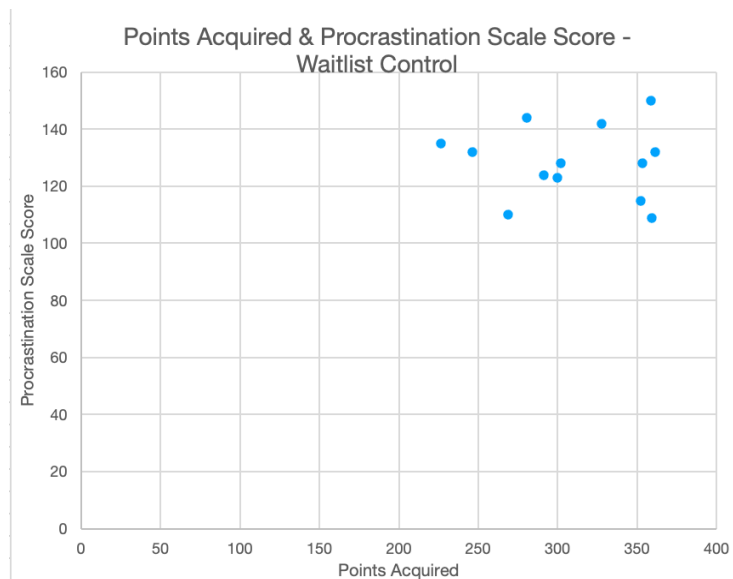


Figure 5.

Figure 5 illustrates scatterplots of the Intervention group's data spread for the total number of points acquired by the fifth week of the course and the scores of the Procrastination and General Self-Efficacy Scale.



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Figure 6.

Figure 6 illustrates scatterplots of the Waitlist Control group's data spread for the total number of points acquired by the fifth week of the course and the scores of the Procrastination and General Self-Efficacy Scale.

**Total Number of Assignments Completed and Survey Scores.** The scores of the Procrastination Scale and the General Self-Efficacy Scale ranged from 38 to 150. Students in the Intervention group received survey scores ranging from 38 to 146, while students in the Waitlist Control group received survey scores ranging from 109 to 150. The median survey score of students in the Intervention group was 124, and the median survey score of students in the Waitlist Control was 128. The correlation between the number of assignments completed and the survey for the Intervention group was very low ( $r^2 = 0.002$ ) as was the relationship for the Waitlist Control group ( $r^2 = 0.02$ ). The data contained two outliers for the Intervention group, and no outliers for the Waitlist Control group (see Figures 7 and 8 for scatter plots). Neither visual inspection nor the coefficient of determination showed a relationship between survey scores and total number of assignments completed in either group.

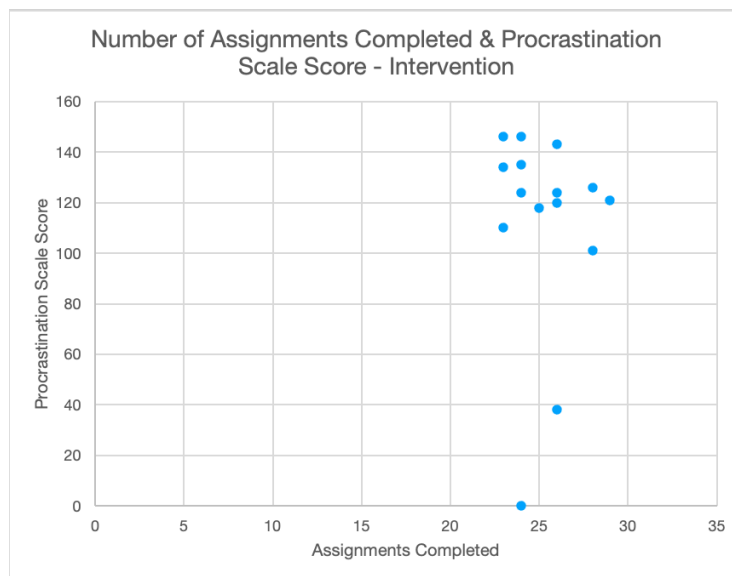


Figure 7.

Figure 7 illustrates scatterplots of the data spread for the total number of assignments completed compared to the survey scores received. The data was gathered from students in the Intervention group.

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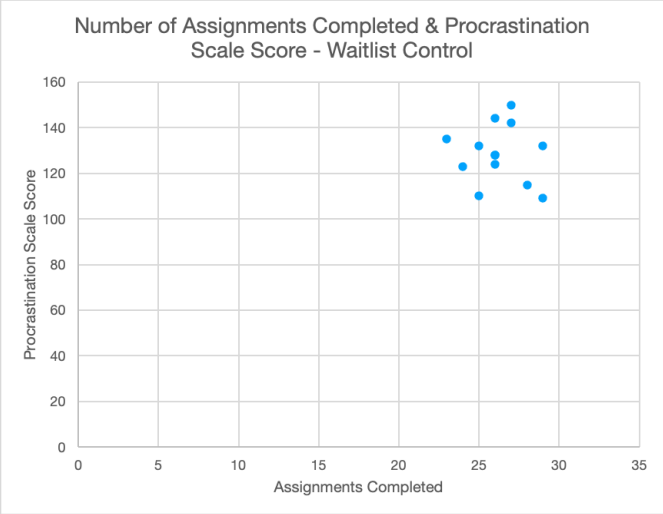


Figure 8.

Figure 8 illustrates scatterplots of the total number of assignments completed by the fifth week of the course and the scores of the Procrastination Scale and the General Self-Efficacy Scale. Data was gathered from the Waitlist Control group.

### **Discussion**

#### ***Summary***

There were no apparent differences in procrastination or early success as measured by points and assignments completed between the Intervention group and the Waitlist Control group. There was adequate participation from the Intervention group in the S.M.A.R.T Goal Worksheet, and this suggests that the S.M.A.R.T Goal Worksheet, the motivational video, and supplemental encouraging emails had no effect on academic performance or procrastination for these students. The total number of points accumulated by both the Intervention group and the Waitlist Control group was similar in nature, as well as the total number of assignments completed by these groups. The completion of the S.M.A.R.T Goal Worksheet by the Intervention group had little impact on reducing procrastination and improving academic success in students.

The participation for the Procrastination Scale and General Self-Efficacy scale varied in both groups; the Intervention group had substantial participation, whilst the Waitlist Control group had little participation. For those who participated in the Procrastination Scale, procrastination was not correlated with performance in the course. Students in the Intervention group had relatively similar scores to those in the Waitlist Control group in terms of the survey and total points accumulated. Majority of students in both groups scored over 100 on the survey, which indicates high levels of procrastination in those students. There were no apparent relationships between the scores on the scales and academic performance. It may be that the scales did not adequately measure procrastination behaviors relevant to online asynchronous classes, as many students with high scores on the Procrastination Scale and General Self-Efficacy Scale also have among the highest grades in the course.

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### ***Limitations & Future Directions***

The students enrolled in the class prior to the start of the semester were randomly assigned to a group; however, students that joined after that random assignment were added to the waitlist control. Therefore, there was an uneven number of participants in the groups and those that added after the start of the class may have been more motivated to engage with coursework “to catch up” than those who enrolled early. Future research should explore the impact of implementing the intervention after the last add-class date. Such change would reduce the potential “catch up” confound.

The study encouraged students to participate in exchange for a few additional points in the course. Only about 35% of students completed the S.M.A.R.T. Goal Worksheet and 44% completed the procrastination scale. That is, the participation rates were quite low. It is possible that either the email invitation or the number of points offered was ineffective for recruitment in the key features of the study. Future research should evaluate multiple recruitment measures and various incentives.

The data for this study was collected from a singular five-week period instead of the entire course. It is possible that differences between the groups would emerge at mid-term or at the end of class. These data sets were not examined. Additionally, the study was conducted in a single class. Future research should examine the impact of an improved motivational intervention across the entire semester or potentially across multiple semesters or classes. It is also possible that motivational interventions would be more effective for classes typically taken earlier in a college career (i.e., 100 and 200 level courses). When examining interventions across multiple classes, future researchers may consider examining the effect of course level.

This study was conducted in a somewhat rushed manner; therefore, pilot testing of the intervention was not possible. This may have contributed to the development of an ineffective intervention. Future research should evaluate multiple versions of a potential interventions. This evaluation could be done using multiple different intervention groups within one study. Additionally, it is unclear how many students in both groups actually engaged with the video.



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Future research should include attention checks or other methods of measuring engagement.

The study did not include feedback about nor encourage adherence to the self-selected S.M.A.R.T Goals. Additionally, the intervention did not include opportunities to frequently revise the goals. It may be that receiving such feedback and/or prompts to review goals is an important component of proximal goal setting. Future research should evaluate the use of various follow-up methods. Frequent checks about adherence to the self-selected goals may make it more likely that students adhere to such goals by serving as opportunities for prompting academic behavior for self-consequation. Opportunities to review goals may also serve as prompts to increase academic effort.

It may be that the intervention would have been effective for those demonstrating procrastination during the first weeks of the class if it had been provided only to those students. That is, perhaps targeting poorer performing students would have shown an effect. Future research should evaluate this possibility by grouping students by initial course achievement and evaluating the impact of such interventions.

The intervention may not have been specific enough to the types of assignments in this course. This particular course has many small assignments that students tend to not find particularly difficult to complete. There are a few larger, more time-consuming assignments. Perhaps the intervention could focus on specific assignments that students have shown procrastination or poor academic performance on.

Another reason the intervention may have been ineffective is that interacting with emails and videos may not be as impactful as interacting in real time with another person or with an interactive A.I. chat. One-on-one discussion of the intervention with students via the researcher through in-person or online meetings or A.I. chat may be effective in increasing the application of the intervention and possibly reducing procrastination. Further research should evaluate these possibilities by implementing such strategies.

It may also be that this motivational intervention would have been more effective in a synchronous or in-person class. It is possible that a synchronous or in-person class would allow

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for researchers to achieve more thorough data. That is, being in a setting in which the researcher can directly observe student participation in the intervention or procrastination in the class would be beneficial to the study. Future research should consider applying the motivational intervention to such classes, thus achieving a more direct understanding of student performance in the study.

While the measures of procrastination were well validated with other samples, this study showed no relationship between the measure and early course performance. Perhaps the measures would be related to end-of-class performance, which was not possible to measure in this study. It is also possible that the scores on these measures of procrastination may not be valid in the context of asynchronous classes. If the measures are unrelated to end-of-class performance in other studies, future researchers should conduct validation studies of various procrastination measures in the context online asynchronous classes.

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**Appendix A**

Tuckman Procrastination Survey

1. I needlessly delay finishing jobs, even when they're important
2. I postpone starting in on things I don't like to do
3. When I have a deadline, i wait till the last minute
4. I delay making tough decisions
5. I stall on initiating new activities
6. I'm on time for appointments
7. I keep putting off improving my work habits
8. I get right to work, even on life's unpleasant chores
9. I manage to find an excuse for not doing something
10. I avoid doing those things which i expect to do poorly
11. I put the necessary time into even boring tasks, like studying
12. When i get tired of an unpleasant job, I stop
13. I believe in "keeping my nose to the grindstone"
14. When something's not worth the trouble, i stop
15. I believe that things i do not like doing should not exist
16. I consider people who make me do unfair and difficult things to be rotten
17. When it counts, i can manage to enjoy even studying
18. I am an incurable time waster
19. I feel that its my absolute right to have other people treat me fairly
20. I believe that other people don't have the right to give me deadlines
21. Studying makes me feel entirely miserable

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22. I'm a time waster now but i can't seem to do anything about it
23. When somethings too tough to tackle, i believe in postponing it
24. I promise myself i'll do something and then drag my feet
25. Whenever i make a plan of action, i follow it
26. I wish i could find an easy way to get myself moving
27. When i have trouble with a task, it's usually my own fault
28. Even though i hate myself if i don't get started, it doesn't get me going
29. I always finish important jobs with time to spare
30. When i'm done with my work, i check it over
31. I look for a loophole or shortcut to get through a tough task
32. I get stuck in neutral even though i know how important it is to get started
33. I never met a job i couldn't "lick"
34. Putting something off until tomorrow is not the way I do it
35. I feel that work burns me out.

**Appendix B**

General Self-Efficacy Scale

1. I can always manage to solve difficult problems if I try hard enough
2. If someone opposes me, I can find the means and ways to get what I want.
3. It is easy for me to stick to my aims and accomplish my goals.
4. I am confident that I could deal efficiently with unexpected events.
5. Thanks to my resourcefulness, I know how to handle unforeseen situations.
6. I can solve most problems if I invest the necessary effort.
7. I can remain calm when facing difficulties because I can rely on my coping abilities.
8. When I am confronted with a problem, I can usually find several solutions.
9. If I am in trouble, I can usually think of a solution
10. I can usually handle whatever comes my way

**Appendix C**

S.M.A.R.T. Goal Worksheet

## S.M.A.R.T. Goal Template

A S.M.A.R.T. Goal follows a framework designed to increase the chances of success for a particular goal. By setting a S.M.A.R.T. Goal, one is creating a strategy to accomplish a goal that is carefully and thoughtfully planned, executed, and tracked. A S.M.A.R.T. Goal is specific, measurable, achievable, relevant, and time-bound.

| Acronym | Description | Developing Your S.M.A.R.T Goal  |
|---------|-------------|---|
| S       | Specific    | <p>Goal is clear, detailed, and unambiguous. It is vital to answer the five “W” questions:</p> <ul style="list-style-type: none"> <li>- What: What do you want to accomplish?</li> <li>- Why: Why do you want to accomplish it?                             <ul style="list-style-type: none"> <li>- Specific reasons, purposes, or benefits of the goal</li> </ul> </li> <li>- Who: Who needs to be involved in order to achieve your goal?</li> <li>- Where: Where will this take place?</li> <li>- When: When should your goal be achieved?</li> </ul> |
| M       | Measurable  | <p>Goal is measurable, meaning you are easily able to track and assess your progress. If a goal is not measurable, it is not possible to monitor whether you are successfully moving towards achieving your goal. A measurable goal should be developed by answering the following questions:</p> <ul style="list-style-type: none"> <li>- How much?</li> <li>- How many?</li> <li>- What are the indicators of progress?</li> </ul>  |

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|   |            |   |
|---|------------|---|
| A | Achievable | <p>Goal must be realistic and achievable. The development of new skills and resources may be required depending on the end goal. The goal may challenge you, but remain doable and motivational. An achievable goal should be developed by answering the following questions:</p> <ul style="list-style-type: none"> <li>- How can the goal be accomplished?</li> <li>- Are the necessary tools and skills available?</li> <li>- What tools and skills will be required to achieve the goal?</li> </ul> |
| R | Relevant   | <p>Goal must reflect an objective you are willing and able to work towards. A relevant goal should be developed by answering the following questions:</p> <ul style="list-style-type: none"> <li>- Does it reflect other efforts and needs?</li> <li>- Does it seem worthwhile?</li> <li>- How will goal completion be beneficial to you?</li> </ul>  |
| T | Time-Bound | <p>Goal must have a time period or target completion date. Creating a realistic end date can form a sense of urgency, which can be beneficial in achieving the goal. Timeliness is designed to prevent goals from being overtaken by daily issues that arise. A time-bound goal should be developed by answering the following questions:</p> <ul style="list-style-type: none"> <li>- When will the goal be achieved?</li> <li>- What can be accomplished today?</li> </ul>                            |

## S.M.A.R.T. Goal Worksheet Example

Below is an example of a S.M.A.R.T. Goal worksheet that is properly created and planned out. It is alright to start out with a generalized initial goal, and as you go through the questions, the goal will become more specialized and specific. Take some time to think of a goal that is beneficial to you, and use this as a tool to accomplish that goal.

|                         |   |
|-------------------------|---|
| <b>INITIAL<br/>GOAL</b> | Write the goal you would like to achieve. |
|                         | I want to improve my research skills.     |

|                 |   |
|-----------------|---|
| <b>S</b>        | What do you want to accomplish? Why do you want to accomplish it?<br>Who needs to be involved? Where will this take place? When will this |
| <b>SPECIFIC</b> | My focus is on research skills for my education research course so that I will have a solid foundation for my future field of study..     |

|                   |  |
|-------------------|--|
| <b>M</b>          | How will you measure your progress? How will you know when you have successfully achieved your goal?   |
| <b>MEASURABLE</b> | I will measure my success by reading feedback from my teacher who I have asked to provide a subjective comment about the research conducted in preparation for my end-of-semester paper. |

|          |   |
|----------|---|
| <b>A</b> | How can the goal be accomplished? Is the goal achievable with your current skills and resources? If not, can you obtain these skills/ |
|----------|---|

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|            |  |
|------------|--|
| ACHIEVABLE | There is the library that I haven't used much but I think with that resource I will be able to research much more skillfully.  |
| R          | Is this goal worthwhile and aligned with overall objectives? How will the completion of the goal be beneficial to you?   |
| RELEVANT   | Improving my research skills will help me get better grades across all my classes into the future.   |
| T          | When is the deadline for the goal? Is this deadline realistic?   |
| TIME-BOUND | I have set the end-of-semester feedback as the end goal.   |
| SMART      | Review what you have written, and rewrite your "Initial Goal" into a S.M.A.R.T. Goal based on the above answers. Make sure that your goal is <b><u>S</u>pecific, <u>M</u>easurable, <u>A</u>chievable, <u>R</u>elevant, and <u>T</u>ime-Bound!</b>                           |
| GOAL       | I will improve my research skills by using library resources and taking notes from the recommended readings for my course. I will do this every Friday afternoon for 3 weeks. I will aim for a subjective statement on my end-of-semester feedback about my research skills. |



## S.M.A.R.T. Goal Worksheet

S.M.A.R.T. Goals are designed to put oneself in the best position to successfully accomplish a significant goal. Crafting S.M.A.R.T. Goals allow one to realize if what one wants is realistic and determine a deadline. Use concise language, and include important information. This was created by the P.I. to help you succeed, so take this seriously when answering questions.

|                         |   |
|-------------------------|---|
| <b>INITIAL<br/>GOAL</b> | Write the goal you would like to achieve. |
| <b>GOAL</b>             |   |

|                 |   |
|-----------------|---|
| <b>S</b>        | What do you want to accomplish? Why do you want to accomplish it?<br>Who needs to be involved? Where will this take place? When will this |
| <b>SPECIFIC</b> |   |

|                   |   |
|-------------------|---|
| <b>M</b>          | How will you measure your progress? How will you know when you have<br>successfully achieved your goal? |
| <b>MEASURABLE</b> |   |

|          |  |
|----------|--|
| <b>A</b> | How can the goal be accomplished? Is the goal achievable with your<br>current skills and resources? If not, can you obtain these skills/ |
|----------|--|

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|            |  |
|------------|--|
| ACHIEVABLE |  |
| R          | Is this goal worthwhile and aligned with overall objectives? How will the completion of the goal be beneficial to you?   |
| RELEVANT   |  |
| T          | When is the deadline for the goal? Is this deadline realistic?   |
| TIME-BOUND |  |
| SMART      | Review what you have written, and rewrite your "Initial Goal" into a S.M.A.R.T. Goal based on the above answers. Make sure that your goal is <b><u>S</u>pecific, <u>M</u>easurable, <u>A</u>chievable, <u>R</u>elevant, and <u>T</u>ime-Bound!</b> |
| GOAL       |  |

## **Appendix D**

### Draft Video Script

Hello everyone! My name is Abigail Perkins, but you can call me Abby. I am currently a senior Allied Health Studies Major with a minor in Psychology, and I am very excited to be one of y'all's teaching assistants this semester! With the course beginning in three days, I just wanted to send you all an introduction to myself and the course. Within the first week of class, you will have a syllabus quiz and S. M. A. R. T. goal activity that must be completed. The A.R.T. goal activity is a personal tool for you all to use throughout the semester, so take it seriously! This SMART goal worksheet is based on research into the setting of proximal subgoals, and has been proven to have the most success in lowering procrastination and heightening academic success in students. This worksheet will include specifics of what SMART goals are, an example of a SMART goal, and finally a template for you to create your own SMART goal for this course. This is a tool created to heighten your chances of success, so please treat it seriously and take time while completing. There are several assignments throughout this course that take time management skills and focus, so please be mindful of that when creating your SMART goals. The secret of getting ahead is getting started. The secret of getting started is breaking your complex overwhelming tasks into small manageable tasks, and starting on the first one. The SMART goal worksheet will help you break down the complex tasks of this course into small ones, hence giving you a better chance of doing well in the course. One of the best escapes from the prison of procrastination is to take even the smallest step toward your goal. Doing just a little bit during the time you have available puts you that much further ahead than if you took no action at all. The syllabus quiz will be available for you to take on the first day of the course, so do your best! Instructions for these activities will be listed through Blackboard. This

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course is based on a point system, with every assignment contributing to the overall 1000 points possible. There are weekly assignments that consist of tests, discussion guides, and reflections. There are also a few major assignment options offered in order to achieve 1000 points. The key assignments to focus and stay on top of are the weekly discussions, as you can potentially earn more points by providing evidence that you worked with another student in real time. Success in this class is dependent on time management skills and staying on top of assignment due dates.

If these things are utilized properly, it is probable to achieve a high grade in the course. The drop date for this course with a refund is February 3, and the last day to drop the course is March 10. I am confident in each and every one of you, and I know that you will excel in this course! I am excited for this semester, please feel free to contact me with any questions or concerns!