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## Why Procrastinate: An Investigation of the Root Causes behind Procrastination

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### Abstract

This paper examines different theories on the reasons why students procrastinate on their academic assignments. Although the fear of failure, self-regulatory failures and low self-efficacy have been linked to procrastination among students, recent research suggests these theories aren't complete because they don't account for task aversiveness or the hyperbolic discounting of time. The Temporal Motivation Theory is the most valid theory of procrastination today because it incorporates the self-regulatory and self-efficacy theories and accounts for task aversiveness and the hyperbolic discounting of time. By understanding the root causes behind procrastination, effective solutions can be invented, researched and spread to stem the tide of procrastination among students and in society.

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Around 800 BC, Greek poet Hedroid wrote in one of the earliest mentions of procrastination that “a man who puts off work is always at hand-grips with ruin” (Steel, 2007). Three hundred years later, in 500 BC, Lord Krishna warns against procrastination in *The Bhagavad Gita*, the most sacred text of Hinduism. History is filled with many famous procrastinators: St. Augustine of Hippo who famously said “Give me chastity and continency-but not yet”, Leonardo da Vinci who lamented late in his life that he couldn't finish many of his designs and Hamlet who basically postponed action for most of his self-titled play

with eloquent poetry and prose including his soliloquy starting with “To be or not to be, that is the question”.

After the Industrial Revolution, references to procrastination as an evil phenomenon really picked up as more stringent schedules based on industrial production discouraged delay (Ferrari, Johnson, and McCown, 1995). The phenomenon of procrastination has existed for much of history and continues to thrive in the modern day. Depending on the study, 80 to 95% of college students have admitted to procrastinating (Ellis and Knaus, 1977) while 50% of college students chronically procrastinate (Day et al. 2000). In addition, 15 to 20% of adults also chronically procrastinate (J. Harriott & Ferrari, 1996).

The best definition for *procrastination* is the delaying of a task that was originally planned despite expecting to be worse off for the delay (van Eerde, 2003). Because the delay is irrational, people end up voluntarily choosing a course of action that they know will not maximize their physical, psychological and material well-being. The definition of *procrastination* holds a decidedly negative denotation and connotation.

Procrastination in the academic realm holds many negative consequences including lost time, increased stress, lower grades, poorer health, decreased long-term learning and lower self-esteem (Hoover, 2005). Even though the outcomes produced by procrastinating are overwhelmingly negative, college students overwhelmingly engage in it. This incongruity brings to mind one simple question: why engage in an activity that you know, usually from experience, is bad for you?

Although the fear of failure, self-regulatory failures and low self-efficacy have been linked to procrastination among students, recent research suggests these theories aren't complete because they don't incorporate task aversiveness or the hyperbolic discounting of time like the Temporal Motivation Theory does.

Chronic procrastination is either getting worse or more people are more willing to admit to chronically procrastinating (Steel, 2007). Back in 1978, only 5% of the American populace admitted to chronically procrastinating while today, the figure routinely hovers between 15 to 20%. Around half of college students admit to chronically procrastinating, which is high in historical terms even for college students. The reasons for this increase in procrastination in America can be attributed to two main causes.

First, modern technology makes it increasingly easier for people to procrastinate. The computer has activities that cater to many different sectors of society and distractions like checking e-mail, messaging friends instantly, surfing the news, listening to music, watching videos on YouTube, playing computer games and hanging out in virtual social networks like

Facebook and MySpace can all unnecessarily delay the task at hand. The computer isn't the only distraction: television, cell phones, mp3 players, video games and a whole host of increasingly sophisticated, modern inventions can cause serious procrastination.

Second, procrastination has increased as post-modern values have permeated much of Western society in the last thirty years. According to Dr. Ronald Inglehart, a prominent political science at the University of Michigan and director of the World Values Survey, Western societies started developing postmodern values like tolerance, appreciation of social contacts and self-actualization which coexist with modern values like hard work, security and prosperity. When applied to academics, modern values indicate a preference for school, future goals and hard work while postmodern values indicate a preference for social activities and pleasure now. In many cases, there is limited time to pursue different academic and leisure activities, leading to a motivational conflict between the two activities. Depending on which value structure they have, students will also have different daily routines (Dietz, Hofer and Fries, 2007). Students with modern values want to plan for the future and will plan out their daily routine to meet their goals. On the other hand, students with postmodern values like to spontaneously decide the activities they want to participate in during the day, leading to the higher chance of delaying academic tasks with little immediate pleasure. Drs. Franziska Dietz, Manfred Hofer and Stefan Fries, who are all professors of Psychology at the University of Mannheim in Germany, performed an empirical study on 700 German students that proved Inglehart's theory by finding that "postmodern value orientation was positively linked to academic procrastination".

Even though procrastination has been growing for decades and is considered a serious problem today, it wasn't regarded as a serious psychological problem and was thus ignored by psychologists for much of history. In the eyes of most psychologists and the general populace, procrastination was regarded as a problem synonymous with laziness. The first study that addressed the reasons students procrastinate was done in 1984 by a pair of prominent psychologists, Linda Solomon and Esther Rothblum of the University of Vermont. To assess procrastination, the two authors created a test to measure procrastination called the Procrastination Assessment Scale Students (PASS), which has two parts. The first part deals with how frequently the students procrastinate on 6 academic tasks and whether they think it is a problem, with higher scores indicating higher self-reported procrastination. The second part deals with the factors behind the procrastination, and students assess which of the 26 factors are most responsible for their procrastination. The study found that fear of failure and task aversiveness were the two main reasons why college students procrastinated (Solomon & Rothblum, 1984). Fear of failure is usually manifested as performance anxiety, lack of self-confidence and perfectionism.

Many studies have been done to confirm the effects of each of these three variables. A study done by Dr. Anthony J. Onwuegbuzie, an associate professor of Psychology at the University of South Florida, showed the effects of perfectionism on procrastination in graduate students. Perfectionism occurs in three separate forms: self-oriented perfectionism occurs when people place high standards for themselves, other-oriented perfectionism occurs when people place high standards for other people and socially-prescribed perfectionism occurs when people allow others to place high standards on them. The study found that "overall academic procrastination appears to be related significantly to socially prescribed perfectionism" (Onwuegbuzie, 2000). Basically, Dr. Onwuegbuzie's study implies that students procrastinate because they feel that other people have high expectations of their work. Students seem to feel an implicit pressure from their peers and professors to produce very good ideas and research on the very first try. As a reaction to this socially-prescribed perfectionism, students delay their work. The study also found that self-oriented perfectionism had a small effect on procrastination while other-oriented perfectionism had no effect on procrastination.

However, many studies began refuting fear of failure and its manifestations as a valid cause of procrastination (Ackerman and Gross, 2005). Dr. Ackerman and Dr. Gross of California State University split a group of 198 students into a low procrastinating group and a high procrastination group. Each student was asked about their fear of the same assignment used in the study, but no statistically relevant difference about fear emerged between the two groups. Dr. Piers Steel, an associate professor at the University of Calgary who has spent 12 years studying procrastination exclusively, looked at the findings of every procrastination study done on the fear of failure and combined them into a single meta-analysis. Dr. Steel found that the fear of failure had no statistically relevant effect on procrastination, which contradicted Solomon and Rothblum's original study and many anecdotes about the effect fear of failure had on procrastination (Steel, 2007). The only manifestation of fear of failure that is even weakly related to procrastination is socially-prescribed perfectionism. However, only 7% of people in an open-ended questionnaire on procrastination listed perfectionism as a reason for their procrastination (Haycock, 1993). Clearly, another motivation was needed to explain the prevalence of procrastination in students and the general populace.

Even before the fear of failure hypothesis was shown to have a minimal to weak relation to procrastination, many psychologists and scholars began investigating other motivational factors that could cause procrastination. The self-determination theory states there are five types of self-regulation that represent different levels of autonomy for a person (Senecal, Koestner, and Vallerand, 1995). These are amotivation in which there is no basis to perform a behavior, external regulation in which behavior is based on other people, introjected

regulation in which behavior is based on guilt, identified regulation in which behavior is based on future goals and values and intrinsic regulation in which behavior is based on actually performing a behavior. Of these types, the self-regulation theory claims that only identified and intrinsic regulation are autonomous forms of behavior and external regulation are nonautonomous forms of behavior.

Autonomous behavior differs from nonautonomous behavior because it leads to greater task initiative, positive feelings and more consistency between goals and actions. Procrastination can be seen as the result of nonautonomous form of regulation in the academic fields. People who aren't motivated or are motivated by external conditions will wait until the last minute when they feel pressured to act. On the other hand, people engaging in more autonomous forms of self-regulation such as identified or intrinsic regulation will perform the task in a timely fashion even if it is unpleasant.

Since college is not mandatory for students to attend, college students can be assumed to voluntarily enroll in college for their own education and future well-being. Thus, procrastination represents a schism between the goals and actions of college students because their goal of completing college successfully is hindered by their action of procrastinating on assignments. In addition, students may procrastinate because they feel negative or conflicted about different courses they are enrolled in or because they feel they don't have any reason to learn the material taught by these courses. Thus, academic procrastination in college displays the three traits of nonautonomous behavior, lack of initiative, negative feelings and an inability to behave consistently with attitudes or goals.

To figure out the effect of self-regulation on procrastination, Drs. Senecal and Koestner of McGill University and Dr. Vallerand of the Université du Québec à Montréal set up an empirical study involving 498 French-Canadian students who were given a questionnaire not asking why they procrastinated but why they were pursuing academics in the first place. As predicted by the self-determination theory, students who are unmotivated or are externally motivated by other people or standards tended to procrastinate much more than students who are intrinsically motivated by their interest in the subject. The study also found that "dispositional factors associated with fear of failure, such as depression, anxiety, and low self-esteem, were all related to higher levels of procrastination. However, the self-regulation variables were associated with academic procrastination even after we controlled for the effects of the fear-of-failure variables." (Senecal, Koestner, and Vallerand, 1995). Basically, students may not procrastinate because they are afraid of failing on the task but instead because they don't see any reason besides external standards like grades to complete the task. The study found identified motivation, in which people perform tasks because they feel the task is important

and tied to their goals, was shown not to have any benefit in reducing procrastination. According to this study, only intrinsic motivation, the highest form of autonomous behavior, can truly reduce procrastination among students. However, a more statistically accurate meta-analysis combined the results of many empirical studies on motivation and found both identified motivation and intrinsic motivation can lead to less procrastination as predicted by the self-regulation theory. (Steel, 2007)

Self-efficacy was another key aspect to understanding procrastination. Self-efficacy refers to a person's belief in his or her ability to achieve a task at hand (Bandura, 1997). In academics, self-efficacy has shown to increase academic performance and has an inverse relationship with procrastination. However, the impact of self-efficacy is most felt when the task is specific rather than general. For example, assuming a constant level of self-efficacy, a student who says "I know I can integrate well using a variety of techniques" will probably do better on a test in the second semester of calculus than a person who says "I know I can do math". The reason is the second semester of calculus revolves around integration, and a student confident in his or her abilities to integrate will do better than a student who is more confident in his ability to understand math, which is a general subject encompassing many concepts and skills.

Since students learn almost all of the material in any college course for the first time in their lives, self-efficacy for specific tasks, such as integration in the second semester of calculus, is usually quite low at the beginning. A student's confidence in his or her ability to learn new material is more important than actually having known that material from the start of the class. Thus, self-efficacy can be a more useful concept when it is modified with self-regulation to form a slightly different concept: self-efficacy for self-regulatory learning (Zimmerman et al., 1992). Self-regulatory learning refers to behavior that strategically gains knowledge and mastery of a subject through a variety of methods depending on the task at hand; self-efficacy for self-regulated learning refers to a student's confidence in engaging in self-regulatory learning. Students with high self-efficacy for self-regulated learning are able to direct their efforts in a way that fosters academic achievement. These efforts include setting high goals and seeking help when needed. The ability to seek help shows that a student can accurately judge the difficulty of the task and knows how to remedy the problem by seeking help from the appropriate sources. By contrast, students with low self-efficacy for self-regulated learning give up easily and display low task persistence, effort and interest. All of these qualities are linked to high levels of procrastination.

To test whether self-efficacy for self-regulated learning leads to decreased procrastination, Crystal Tan and her colleagues including Dr. Rebecca Ang, a professor at Nanyang Technological Institute in Singapore, set up an empirical study involving 226 undergraduates at Nanyang

Technological Institute who were pursuing a degree in Education. All of the study participants reported their grade and took a variety of tests including the Procrastination Scale, Self-Efficacy for Self-Regulated Learning Scale, Motivated Strategies for Learning Questionnaire-Test Anxiety scale, Academic Expectations Stress Inventory and the Motivated Strategies for Learning Questionnaire-Help-Seeking scale to thoroughly measure both procrastination and self-efficacy for self-regulated learning. The results showed “self-efficacy for self-regulated learning was strongly and negatively related to procrastination.” (Tan et. al, 2008). This empirical study and many others have shown that self-efficacy for self-regulated learning is negatively related to procrastination. As self-efficacy for self-regulated learning increases, procrastination decreases as there is an inverse relationship between the two variables. By convention, when psychologists refer to the self-efficacy theory, they are actually referring to not only self-efficacy but also self-efficacy for self-regulated learning. Psychological convention will be followed for the rest of this research paper.

Although both the self-regulation and self-efficacy theories make sense, they don't express the full scope of procrastination because they both leave out task aversiveness and the hyperbolic discounting of time.

First, task aversiveness was implicated as an original reason for procrastination by Solomon and Rothblum and has withstood the test of time in numerous empirical studies and meta-analyses (Steel, 2007). Theoretically, procrastination involves voluntarily choosing one task over another; thus, the nature of the task contributes to procrastination because people don't randomly procrastinate on certain tasks while completing other tasks. However, this theoretical framework explains only why we avoid tasks rather than delay them. The reason for the delay is based on the timing of rewards and punishments. When either the rewards or punishments for completing a task are close, the consequences resulting from the completion of the task become more tangible, and there is thus a greater urgency to complete the task in order to either benefit from the positive consequences or avoid the negative consequences.

Second, both the self-regulation and self-efficacy theories leave out the hyperbolic discounting of time. Dr. Henri C. Schouwenburg, author of several books on procrastination, and Siegfried Dewitt, a professor at the University of Leuven in Belgium, did an empirical study involving 147 college freshmen at the University of Leuven. In the second part of the study, a random subsection of the participants were contacted 11 weeks before their exams were scheduled. In this study, the participants were asked to write down their study intentions and behaviors as well as the reasons for the gap between the two. The study found that “all students tend to postpone the bulk of their study activities to the last week before an exam, and that this trend could nicely be described by a hyperbolic curve. The results also revealed

that procrastinators postponed more of their intentions, mainly because of fun alternatives, but did not intend to study less or later.” (Dewitt and Schouwenburg, 2002). The reason for the hyperbolic discounting of time can be attributed to a quirk in the way the brain functions. The brain tends to value certain outcomes more than uncertain ones even if the uncertain outcomes may lead to more gain. In the case of time, the brain tends to place greater significance of present values because they are certain and discounts the value of rewards in the future because they are uncertain. In the case of academics, the value of socializing in the present is weighed heavily while the value of getting good grades in the future is discounted. This quirk leads to delays in studying for tests, writing term papers and getting prepared for weekly assignments. As can be expected, students who procrastinate generally discounted future values greater than students who don't procrastinate.

Because both the self-regulation and self-efficacy theories don't account for either task aversiveness or the hyperbolic discounting of time, it can be concluded that they don't represent a complete picture of procrastination, which has shown to empirically and theoretically include both factors. Dr. Piers Steel, the aforementioned expert on procrastination from the University of Calgary, did a meta-analysis by combining the results of many empirical studies on procrastination and thus creating larger effect sizes, which are then modeled using meta-regressions and controlled for study characteristics. Basically, a meta-analysis provides better results than individual studies in explaining different hypotheses, which is the reason meta-analyses are used in evidence-based medicine, epidemiology and many other fields (Steel, 2007). Dr. Steel conducted an exhaustive search and found 691 empirical studies about different variables related to procrastination. These empirical studies can be divided to four major sections: task characteristics, individual differences, outcomes and demographics. Studies dealing with task characteristics usually involve the timing of rewards and punishment, and task aversiveness. Studies dealing with individual differences usually involve neuroticism, openness to experience, agreeableness, extraversion and conscientiousness. Studies dealing with outcomes usually involve mood and performance while studies dealing with demographics usually involve age, gender and year.

After the meta-analysis was complete, Dr. Steel looked at all the variables that affect procrastination and formed the Temporal Motivation Theory, which combines the expectancy theory with the hyperbolic discounting that occurs with time. The Temporal Theory can be better understood using the following equation:

$$Utility_i = \frac{E_i \times V_i}{\Gamma_i D}$$

The utility of a given task refers to how desirable it is to complete. Human nature dictates that more desirable tasks will be completed first while less desirable tasks will be delayed. The expectancy of the task (E) refers to the chance a certain outcome will come about. The value that task holds (V) refers to how rewarding the task is while performing it. Tasks with high expectancy and value will have higher utilities and will thus be completed quickly. Basically, a task with that is pleasurable and has a good chance of success will usually be completed. The denominator of the formula accounts for time. Delay (D) refers to when the activities is performed; enjoyable activities that are immediately realizable will have a short delay and thus a high utility while activities in the distant future have longer delays and have a low utility. Sensitivity to delay (?) represents the importance of the delay to a person. If a person has a high sensitivity to delay, then the utility of the task will be low and person will procrastinate on the task. If a person has a low sensitivity to delay, then utility will be high and the person will procrastinate less on the task.

Each of these variables can be further subdivided into smaller variables. These smaller variables have actually been tested in empirical studies and have either a positive or negative relationship with procrastination. If the relationship between the variable and procrastination is positive, then an increase in the variable will lead to an increase in procrastination. If the relationship between the variable and procrastination is negative, then an increase in the variable will lead to a decrease in procrastination.

First, the expectancy of a task is only linked to one variable, self-efficacy. People with higher self-efficacy believe they can perform a wide variety of tasks successfully, meaning they have greater expectations of success. In sum, the entire theory on self-efficacy has been incorporated into the Temporal Motivation Theory. Self-efficacy has a negative relationship with procrastination.

Second, the value of a task is represented by three items: task aversiveness, need for achievement and boredom proneness. First, task aversiveness has a positive relationship with procrastination because people tend to avoid unpleasant tasks. Second, the need for achievement has a negative relationship with procrastination. Dr. Steel's meta-analysis revealed that both identified and intrinsic motivation decreases procrastination. This conclusion means the Temporal Motivation Theory incorporated the self-regulation theory in its entirety. Finally, boredom proneness has a positive correlation with procrastination. Boredom proneness increases the likelihood that a variety of tasks will be found boring and unpleasant. Boredom proneness increases task aversiveness, which as mentioned above has a positive correlation with procrastination.

Third, sensitivity to delay can be linked to four separate variables: distractibility,

impulsiveness, lack of self-control and age. The first three variables have a positive relationship with procrastination. By increasing distractibility, impulsiveness and a lack of self-control, sensitivity to delay is increased which causes the utility of a task to decrease. The fourth variable, age, has a negative relationship with procrastination. As most people get older, they can better evaluate the benefits of the present and future, leading to a decline in the hyperbolic discounting of time. By increasing age, sensitivity to delay is decreased which causes the utility of a task to increase.

Fourth, the delay of a task is represented by three items: timing of rewards and punishments, organization and the intention-action gap. First, the timing of rewards and punishments has a positive relationship with procrastination, meaning the more time there is between the task and the reward or punishment, the more procrastination there will be. Second, organization has a negative relationship with procrastination as people who can set solid goals and keep a schedule will procrastinate less. Finally, the intention-action gap refers to the failure to live up to one's expectations and has a positive relationship with procrastination. If either the timing of rewards and punishments or the intention-action gap is increased, then delay increases, causing the utility of the task to decrease. If the amount of organization is increased, then delay decreases, causing the utility of the task to increase.

The Temporal Motivation Theory discounts the role of neuroticism in procrastination. Neuroticism, which is linked to the fear of failure, doesn't figure because it doesn't affect the utility of a task differently than it does the value of another task done at the same time. This means that neuroticism might decrease the utility of writing a paper but will decrease the utility of socializing by the same amount, leading to no net effect.

The Temporal Motivation Theory can be applied in real world situations to students who procrastinate academically. A college student named Tom Delay has been assigned an essay on September 15th which is due on December 15th. Mr. Delay can either socialize, which he likes to do, or write, which he also likes to do in order to make high grades. Until December 3rd, the utility of socializing surpasses that of writing as the reward of writing is temporally distant while the reward for socializing is present immediately. However, on December 3rd, the utilities switch as the deadline nears and there are twelve days left to work on an essay that was supposed to be a semester-long assignment. If graphed, the curve is shaped like a hyperbola, which led to this phenomenon being called the hyperbolic discounting of time. Key aspects of the Temporal Motivation Theory were also proven in the real world by a mega-trial of 9,351 participants by Dr. Peter Gröpel and Dr. Piers Steel. (Gröpel and Steel, 2008)

In sum, the fear of failure theory isn't a valid theory for procrastination while both the self-regulatory and self-efficacy theories are valid but incomplete because they don't account

for task aversiveness or the hyperbolic discounting of time. The Temporal Motivation Theory is the most valid theory of procrastination today because it incorporates the self-regulatory and self-efficacy theories and accounts for task aversiveness and the hyperbolic discounting of time. Thus, procrastination can be seen to be caused by delaying tasks with low utility, which is directly proportional to expectancy and value and inversely proportional to delay and sensitivity to delay. By understanding the root causes behind procrastination, effective solutions can be invented, researched and spread to stem the tide of procrastination in society.

## About the Author

My name is Neal Thakkar and I am a freshman student at Virginia Commonwealth University. I am grateful to Faye Prichard, my professor in Rhetoric who guided me throughout the research process and edited my final paper.

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