## **Procrastination and Impulsiveness**

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#### Abstract

The present study aimed at determining whether a significant relationship exists between impulsiveness and procrastination. For this purpose a sample of 100 participants between the ages of 18-24 years was taken. Data collection was done using a consent form, a demographic information form, an impulsiveness scale and a procrastination scale, all of which were converted to online self-administered questionnaires. Results obtained were analyzed using Statistical Package for the Social Sciences (SPSS 17). The data revealed a positive correlation (r = 0.45) thus verifying the hypothesis. The observed positive correlation between the two variables depicts that indeed those individuals who score high on the scale of impulsiveness are more likely to score high on the scale of procrastination as well. This means that the two factors co-vary and influence each other.

For many centuries the phenomenon of procrastination has eluded the human mind. To date it still remains a mystery for many. Looking through the pages of history of procrastination, putting off important tasks to a later time, has been widely viewed negatively. Standing unaware regarding the severity of procrastination behavior, as a society generally people do not consider procrastination a problem. However, Ainslie (2005); Critchfield and Kollins, (2001) have regarded it to be at the center of several societal problems; so much so that such a behavior has been regarded evil and sinful in different religions.

The notion that procrastination is negative has existed throughout history and still thought to be true till date.

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In a research conducted by Milgram (1991), he has proposed that procrastination is a sequence of postponement the outcome of which is poor quality work, the person engaging in Procrastinatory behavior considers the assignment undertaken by them important and hence it causes them emotional distress.

Procrastinare, the Latin verb from which the word Procrastination is derived, literally means to put off or postpone for another day (DeSimone, 1993). Procrastination combines the adverb "pro" suggesting a forward motion with "crastinus", which means belonging to tomorrow. Two verbs have been used by ancient Egyptians for procrastination. One of which means "the useful habit of avoiding unnecessary work and impulsive effort, while the other denoted the harmful habits of laziness in completing a task necessary for subsistence". (Ferrari, Johnson & McCown, 1995)

Procrastination is a two sided coin. Agreed that it has some negative connotations attached to it, but one should not forget that at times postponement of action can be beneficial. "Sometimes procrastination is the wise and positive choice: in the case of war, for example, or any other situation when the outcome of an action is unpredictable and might even be harmful to others" (Neville, 2007).

Procrastination being such a widespread and vast phenomenon, a lot about it is yet to be discovered. Due to its potentially harmful nature it is crucial to investigate its causes further. Having said that, many investigations have been conducted and others are still ongoing to uncover reasons behind such procrastinatory behavior.

Procrastination has a three-fold effect on working capabilities of an individual, it lowers ones morale, increases inefficiency and creates feelings of dread towards the task. Incomplete tasks tend to litter ones table, clutter up their day and preoccupy their thoughts. Hence even if the person has started a new task the thought of that incomplete job looms over their head. The fact that the person has left the work undone increases the stress levels and creates anxiety. One starts to dread taking it up again and believes it is more difficult and complex than it really is which in turn increases procrastinatory behavior causing this cycle start all over again.

According to neurobiological viewpoint the part of our brain that is responsible for rational thought and long-term intentions is the prefrontal cortex and the part of the brain responsible for impulses is the limbic system. This limbic system is readily influenced by stimuli for immediate gratification. These impulses generated, supersede the long-term plans/ rational long-term plans one makes. Hence, an individual working on a task finds his focus shifting from the task at

hand to the readily available temptations. Impulsiveness has shown to obtain an average of disattenuated correlation of .52 with procrastination (Steel, 2007).

Supporting the above findings Schouwenburg (2004) says, "various studies show a very distinct clustering of related traits: trait procrastination, weak impulse control, lack of persistence, lack of work discipline, lack of time management skill, and the inability to work methodically".

Several authors have sought to examine the nature of procrastination from a variety of perspectives and its link with different personality traits such as neuroticism and extraversion have been explored.

The personality domain, of Extraversion, consists of individuals who are characterized as sensation-seekers, energetic, enthusiastic, action oriented, and expressive. They are socially participative and like to keep themselves engaged in different activities. Studies have shown that extraversion is negatively correlated with procrastination. Extroverts have been described as "full of energy" and this aspect of theirs is what drives them to work and not indulge in procrastination. Steel's (2007) meta-analysis shows an extremely weak correlation of - 0.12 (K = 27) for this dimension of personality with procrastination.

Neuroticism is also known as emotional instability. Those who score high on this domain of personality tend to easily react to situations with negative emotions. They frequently experience feelings of anger, anxiety and depression and are susceptible to stress. There are two different viewpoints regarding neuroticism and procrastination. According to some researchers if procrastination if likely to occur as a result of task aversiveness then those who are stress prone should procrastinate more (Brown, 1991; Burka & Yuen, 1983; Ellis & Knaus, 1977). On the other hand, Steel's (2007) meta-analysis shows a weak correlation (r = 0.24, K = 59), between the two factors of neuroticism and procrastination.

When impulsiveness is considered to be a facet of either neuroticism or extraversion, then procrastination has been found to be positively correlated with these two domains of personality. "Results analyzed at the facet level indicated that neuroticism's connection to procrastination was 'largely a matter of impulsiveness' (Schouwenburg & Lay, 1995; Johnson & Bloom, 1995)". Impulsiveness as a component of extraversion has proven to be a predictor of procrastinatory behavior.

Impulsivity (or impulsiveness) has been defined as "a tendency to react quickly and inappropriately to a situation rather than take time to consider alternatives and to choose carefully." (Chopra, 2005). Taking impulsiveness as a separate personality trait, it has been proven to be a strong predictor of procrastination. An average correlation of 0.41 (K = 22) between procrastination and impulsiveness has been shown by Steel (2007) in his meta-analysis. Such individuals are easily distracted and readily give in to temptations.

Procrastinators tend to look for immediate gratification in order to relieve themselves from feelings of misery and dread, which they are more susceptible to than compared to those who are punctual. This implies that "procrastinators suffer from a lack of inhibition of competing activities" (Dewitte & Schouwenburg, 2002).

Dewitte and Lens (2000), say that procrastinators are unable to relate the relevance of present efforts with future consequences. For example, a procrastinating cricketer would be unable to link the fact that his practice can have positive effects on his performance during the final match. This suggests that procrastinators suffer from "a lack of facilitation of relevant activities." (Dewitte & Schouwenburg, 2002).

Another research by Blatt and Quinn (1967) supports the finding that impulsive people are more likely to procrastinate. This is because they are preoccupied with fulfilling their present desires and wants, and thus center their interests on satisfying their urges. "In an academic context, as they start one task, typically other issues crowd in around them and begin to offer alternative immediate distractions. The stronger the attraction, the greater is the risk of distraction." (Neville, 2007).

Keeping in mind the above researches, it has been well established that impulsiveness is a strong predictor of procrastination.

Impulsivity itself has been defined in various ways by researchers. For some it is a unidimensional trait (Grano, Virtanen, Vahtera, Elovainio, & Kivimaki, 2004), while others describe it as a multidimensional phenomenon. Whiteside and Lynam (2001) have identified as many as four dimensions. These four dimensions are: 1) urgency, 2) lack of premeditation, 3) lack of perseverance, and 4) sensation-seeking.

The dimension of impulsivity called Urgency, has to do with the tendency towards making 'spur of the moment decisions'. This act of impulsiveness is usually done in order to release oneself from negative moods and stressful situations. Such coping strategies are not considered to be healthy. Since they only provide immediate relief. As mentioned previously procrastinators suffer from lack of inhibition which is what this facet of impulsivity covers.

The tendency (not) to think things over before acting' is the second factor of impulsivity known as Lack of Premeditation. It is not possible to clarify whether this factor is motivating or inhibitory. Thinking about the outcomes of a valued and desirable task can motivate an individual to work towards it and complete the job. On the other hand, if the expected value of the outcome is low or undesirable, thinking about the task can prove to be inhibitory.

The third factor, lack of Perseverance, is defined as 'the inability to finish jobs when started'. This facet of impulsivity would be highly correlated with procrastinatory behavior. When an individual leaves a task incomplete, they are giving into their temptations. This is a very fundamental aspect of impulsive behavior. This aspect has time and again been proven to be related with procrastination by various researchers.

The fourth and last facet is sensation seeking. It reflects 'the tendency to strive for novel experiences and take risks.' Sensation seekers may be more likely to procrastinate due to their desire for excitement which will be brought on by starting a task at the eleventh hour. On the other hand when more exciting and stimulating alternatives present themselves in the environment the attention of sensation seekers is likely to be diverted leaving the task at hand incomplete.

The meta-analysis by Steel (2007) on the nature of procrastination shows that sensation seeking has an average correlation (0.17, K=11) with procrastination. Kachgal, Hansen, & Nutter (2001) and Solomon and Rothblum's (1984a) examined the risk-taking dimension of sensation seeking and its relation with procrastination. The results showed that only 6.4% of the students responded positively to its most popular item, 'Looked forward to the excitement of doing this task at the last minute.' Likewise, Froehlich (1987) found that one of the lowest rated reasons for procrastinating was 'I like the excitement and challenge of doing things at the last minute. (Steel, 2007).

The present study investigates the correlation between impulsiveness and procrastination. Globally, numerous researches have been conducted on procrastination and it still remains a topic of interest for the scientific society. However, this topic has not been explored using Pakistanis as a target sample. This study is an initial attempt to understand the phenomenon of procrastination affecting the nation. This research would prove to be a stepping stone for future researchers who wish to study this phenomenon and its impact on Pakistani society.

Based on a layman's observation, procrastinatory behavior seems to be on the increase in the general public. It affects people from all walks of life. For example, taking the student population into account, when they were asked to relate instances of such behavior several stories were reported.

Such behavior of procrastination is not only highly frustrating but can also lead towards decreased efficiency and reduced self-efficacy within the individual. Thus it is of critical importance to understand this phenomenon.

The present study is likely to corroborate that the variable of impulsiveness correlates with procrastinatory behavior. Since it is an initial effort to understand procrastination in the Pakistani society an effort was made to see if a relationship exists between these two variables as has been stated worldwide.

A likely outcome of the study is that if impulsiveness is found to be a characteristic trait of an individual a reasonable prediction can be made regarding the procrastinatory behavior of that individual.

Conducting studies on procrastination would enable psychologists to understand the causes of such behavior. Once the causes have been identified steps can be taken to develop appropriate counteractions to deal with it. These counteractions can be in the form of behavioral techniques or self-management techniques which would enable procrastinators to handle this stress-inducing behavior effectively

In the light of above literature and researches, the following hypothesis is proposed; There would be a significant relationship between impulsivity and procrastination.

#### Method

### Participants:

The sample included 100 participants, 50 of which were males and 50 were females. The participants were between the ages of 18-24 years and included students and those individuals who have just entered their professional life after completing their education.

### Materials:

The demographic information sheet required them to fill out information about their age, gender, and marital status, area of residence, number of siblings, birth order, education, and occupation.

UPPS-P Impulsive Behavior Scale (UPPS-P) (Whiteside & Lynam; 2001), a revised version of the UPPS that adds an additional factor, "positive urgency"; is a 59-item self-report questionnaire which distinguishes four facets of impulsivity: urgency, lack of premeditation, lack of perseverance, and sensation-seeking. It is scored on a 4-point scale from Strongly Agree to Strongly Disagree

Procrastination was measured using the Tuckman Procrastination Scale (Tuckman, 1990). This scale consisted of 35 items. All items were given in a 4-point Likert-type response format, with 1 being "That's me for sure!" and 4 being "That's not me for sure!". This measure covered three topics of procrastination: a general description of procrastination (e.g., "When I have a deadline, I wait until the last minute"), a tendency to avoid unpleasant or difficult tasks (e.g., "I look for a loophole or shortcut to get through a tough task"), and a tendency to blame others for the situation (e.g., "I believe that other people do not have the right to give me deadlines").

#### Procedure:

The participants were first informed about the study and that their participation is voluntary. They were then asked to follow an online link sent to them via e-mail where they were asked to fill out a demographic information sheet, an impulsiveness scale and a prograstination scale (in the same order).

A correlational analysis of the data collected was done using Statistical Package for the Social Sciences (SPSS 17).

### Results

 Table 1

 Correlation between Procrastination and Impulsiveness

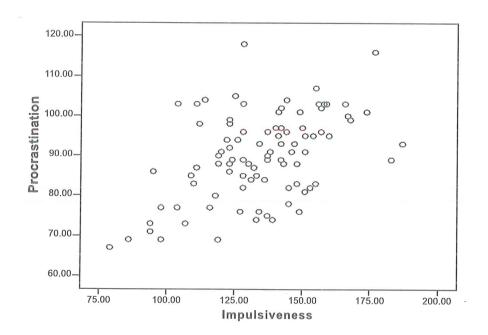
		Impulsiveness	Procrastination
Impulsiveness	Pearson Correlation	1	.449**
	Sig. (2-tailed)		.000
	N	100	100
Procrastination	Pearson Correlation	.449**	1
	Sig. (2-tailed)		.000
	N	100	100

<sup>\*\*.</sup> Correlation is significant at the 0.01 level (2-tailed).

The table shows the Pearson correlation value that exists between the factors of impulsiveness and procrastination.

Figure A

A Scatter Plot showing the correlation between Procrastination and Impulsiveness



### Discussion

As indicated by Table 1 and Figure A there is a moderately significant correlation between impulsiveness and procrastination (r = 0.45). From the results it can be inferred that impulsiveness can be regarded as one of the factors that covaries with procrastination.

This result is in accordance to past researches conducted by different researchers. One such study conducted by McCown (1995) found a significant correlation between procrastination and impulsivity and venturesomeness specifically in college students and in adults a significant correlation was present between only procrastination and impulsiveness.

Steel (2007) in his meta-analysis on procrastination also links it with impulsiveness. According to him "Strong and consistent predictors of procrastination were task aversiveness, task delay, self efficacy, and impulsiveness..."

Impulsive people find it difficult to show restraint. They wish immediate fulfillment of their desires and they do not want to delay gaining pleasurable feelings. Thus to avoid anxiety over a deadline, for example, they would engage in procrastinatory behavior to be in a more agreeable state. For such people, planning ahead of time is next to impossible. This eventually causes them to pull all-nighters to finish tasks in time. Engaging in procrastinatory behavior and indulging in pleasurable activities tends to reduce ones anxiety over undesirable tasks as it gets pushed to the back of one's mind.

In their research Dewitte and Schouwenburg (2002) found that the lack of ability to finish projects, that is a lack of perseverance, is closely associated with procrastination.

There is a twofold reason why impulsiveness can be related to procrastination. As stated above impulsive people tend to undervalue the gratification or satisfaction that they may gain from achieving long-term goals and hence postpone taking the appropriate actions. Along with that they are unable to relate the fact that present efforts will lead to future preferred consequences. As a result they get easily distracted by the temptations present in their environment.

In a study conducted by Schouwenburg and Groenewoud in 2001 addressed the role impulsivity and surrendering to temptations plays in procrastinatory behavior. They asked students to imagine the amount of time left before exams. The result showed that every participant would give into social temptations and study less when the exams seemed far-off and remote rather than when they appeared near. Thus the value of a future reward (i.e. passing the exam) is discounted with time by many people.

In this advancing world of technology individuals are surrounded by temptations ranging from pocket PCs to Blackberries to Iphones and Ipads to Gameboys and PSPs. Whether its work or whether its studies one needs computers and internet to be connected to the world. An example of a common distraction is various social networking websites which provide immediate gratification. One tends to impulsively indulge in such activities thus procrastinate. This may be why a positive correlation has been observed between the two variables in this study where the target population was between the ages 18-24 years; which is an age group popularly known to be frequent users of such advancing technologies.

In today's global village masses are surrounded by anxiety provoking stimuli. To relieve these feelings of angst, misery and dread an impulsive person would rather procrastinate than get down to work because they react quickly to situations and do not think things through. Consequently they may take actions or make decisions that are inappropriate and potentially harmful; such as a decision to watch a movie rather than study for a difficult exam.

The arguments presented above support the findings of the present study. Procrastination has been significantly linked with the variable of impulsiveness in a variety of studies time and again.

Despite the significant correlation observed between the two variables, it must be said that procrastination is also related to a number of other factors which explains why a moderate correlation has been observed. Factors such as low self-efficacy, task aversiveness and fear of failure might also prove to be important variables associated with procrastinatory behavior.

The target population of the present study included a majority of university students and individuals who have just entered their professional lives and started their career. For such people the factors mentioned previously heavily influence their behavior. This also explains why impulsiveness was found to be only moderately correlated with procrastination.

The results of a study by Solomon and Rothblum (1984b) establish the two factors of task aversiveness and fear of failure to be the two most important grounds for the presence of procrastinatory behavior in students enrolled in colleges.

It is interesting to note that procrastinatory behavior is a common phenomenon which has survived through history and continues to casts it's shadow over mankind even today.

A number of elements influence procrastinatory behavior. Out of these impulsiveness is one of the vital factors. The tendency to act immediately, without forethought relates directly to the delaying of given and set tasks.

#### References

- Ainslie, G. (2005). Précis of Breakdown of Will. Behavioral and Brain Sciences, 28(05), 635-650.In P. Steel. (2010). Arousal, avoidant and decisional procrastinators: Do they exist? *Personality and Individual Differences,* 48, 926-934. Retrieved from http://my.psychologytoday.com/files/attachments/49705/arousal-avoidant-and-decisional-procrastinators-dothey-exist.pdf
- Blatt, S. J., & Quinn, P. (1967). Punctual and procrastinating students: A study of temporal parameters. *Journal of Consulting Psychology, 31, 169*–174. In P. Steel. (2007). The Nature of Procrastination: A Meta-Analytic and Theoretical Review of Quintessential Self-Regulatory Failure. *Psychological Bulletin,* 133, 65–94.
- Brown, R. T. (1991). Helping students confront and deal with stress and procrastination. *Journal of College Student Psychotherapy*, 6, 87–102. In P. Steel. (2007). The Nature of Procrastination: A Meta-Analytic and Theoretical Review of Quintessential Self-Regulatory Failure. *Psychological Bulletin*, 133, 65–94.
- Burka, J. B., & Yuen, L. M. (1983). Procrastination: Why you do it, what to do about it. Reading, MA: Addison-Wesley. In P. Steel. (2007). The Nature of Procrastination: A Meta-Analytic and Theoretical Review of Quintessential Self-Regulatory Failure. *Psychological Bulletin*, 133, 65–94.
- Chopra, R. (2005). Dictionary Of Psychology. Retrieved from Dictionary Of Psychology. Retrieved from http://books.google.com.pk/books?id=s2 E0utuF6yQC.
- Critchfield, T., & Kollins, S. (2001). Temporal discounting: Basic research and the analysis of socially important behavior. Journal of Applied Behavior Analysis, 34(1), 101–122. In P. Steel. (2010). Arousal, avoidant and decisional procrastinators: Do they exist? *Personality and Individual Differences*, 48,926-934. Retrieved from http://my.psychologytoday.com/files/attachments/49705/arousal-avoidant-and-decisional-procrastinators-do-they-exist.pdf
- DeSimone, (1993). In Holloway, B. E. (2009). Does Procrastination And Stress Have An Affect On Your Health? Retrieved from http://clearinghouse.missouriwestern.edu/manuscripts/431.php

- Dewitte, S., & Lens, W. (2000). Exploring volitional problems in academic procrastinators. *International Journal of Educational Research*, 33, 733–750. In P. Steel. (2007). The Nature of Procrastination: A Meta-Analytic and Theoretical Review of Quintessential Self-Regulatory Failure. *Psychological Bulletin*, 133, 65–94.
- Dewitte, S., & Schouwenburg, H. (2002). Procrastination, temptations, and incentives: The struggle between the present and the future in procrastinators and the punctual. *European Journal of Personality, 16,* 469–489. In Steel, P. (2007). The Nature of Procrastination: A Meta-Analytic and Theoretical Review of Quintessential Self-Regulatory Failure. *Psychological Bulletin,* 133, 65–94.
- Ellis, A., & Knaus, W. J. (1977). Overcoming procrastination. New York: Signet Books. In P. Steel. (2007). The Nature of Procrastination: A Meta-Analytic and Theoretical Review of Quintessential Self-Regulatory Failure. *Psychological Bulletin*, 133, 65–94.
- Ferrari, J.R., Johnson, J.L., & McCown, W.G. (1995a). *Procrastination and task avoidance*. New York, N.Y.: Plenum Press. In Dr. T. A. Pychyl. (2001). A Brief History of Procrastination Retrieved from http:// http-server.carleton. ca/-tpychyl/prg/research/research history term.html
- Froehlich, R. A. (1987). A descriptive study of general procrastination in a group-oriented treatment setting (Doctoral dissertation, United States International University, 1987). *Dissertation Abstracts International*, 48, 1151. In P. Steel. (2007). The Nature of Procrastination: A Meta-Analytic and Theoretical Review of Quintessential Self-Regulatory Failure. *Psychological Bulletin*, 133, 65–94.
- Grano, N., Virtanen, M., Vahtera, J., Elovainio, M., & Kivimaki, M. (2004). Impulsivity as a predictor of smoking and alcohol consumption. Personality and Individual Differences, 37, 1693—1700. In S. Noar. & L. Pierce, Impulsive Decision-Making. Retrieved from http://www.education.com/reference/article/impulsive-decision-making/
- Johnson, J. L., & Bloom, A. M. (1995). An analysis of the contribution of the five factors of personality to variance in academic procrastination. *Personality and Individual Differences, 18,* 127–133. In P. Steel. (2007). The Nature of Procrastination: A Meta-Analytic and Theoretical Review of Quintessential Self-Regulatory Failure. *Psychological Bulletin,* 133, 65–94.

- Kachgal, M. M., Hansen, L. S., & Nutter, K. J. (2001). Academic procrastination prevention/intervention: Strategies and recommendations. Journal of Developmental Education, 25, 14–24. In P. Steel. (2007). The Nature of Procrastination: A Meta-Analytic and Theoretical Review of Quintessential Self-Regulatory Failure. Psychological Bulletin, 133, 65–94.
- McCown, W. G. (1995). In J. R. Ferrari, J. L. Johnson, & W. G. McCown, (1995). Procrastination and task avoidance: theory, research, and treatment. (pp-43). New York: Plenum Press. Retrieved from http://books.google.com/books?id=Lu4r0H\_wcVcC
- Milgram, N. (1991). Procrastination. In R. Dulbecco (Ed.), Encyclopedia of human biology (Vol. 6, pp. 149-155). New York: Academic Press. Retrieved From http://http-server.carleton.ca/-tpychyl/prg/research history term.html
- Neville, C. (2007). Procrastination: What it is. Why we do it. What we can do about it. Retrieved from http://www.brad.ac.uk/acad/management/external/els/pdf/procrastination.pdf
- Schouwenburg, H. C. (2004). Academic procrastination: Theoretical notions, measurement, and research. In H. C. Schouwenburg, C. H. Lay, T. A. Pychyl, & J. R. Ferrari (Eds.), *Counseling the procrastinator in academic settings* (pp. 3–17). In P. Steel. (2007). The Nature of Procrastination: A Meta-Analytic and Theoretical Review of Quintessential Self-Regulatory Failure. *Psychological Bulletin*, 133, 65–94.
- Schouwenburg, H. C. & Groenewoud, T. (2001). Study motivation under social temptation: effects of trait procrastination. Personality and Individual Differences, 30, 229–240. In S. Dewitte & H. Schouwenburg, (2002). Procrastination, temptations, and incentives: The struggle between the present and the future in procrastinators and the punctual. *European Journal of Personality*, 16, 469–489. DOI: 10.1002/per.461
- Schouwenburg, H. C., & Lay, C. H. (1995). Trait procrastination and the Big Five factors of personality. *Personality and Individual Differences, 18,* 481–490. In P. Steel (2007). The Nature of Procrastination: A Meta-Analytic and Theoretical Review of Quintessential Self-Regulatory Failure. *Psychological Bulletin,* 133, 65–94.

- Solomon, L. J., & Rothblum, E. D. (1984a). Academic procrastination: Frequency and cognitive-behavioral correlates. *Journal of Counseling Psychology,* 31, 503–509. In P. Steel (2007). The Nature of Procrastination: A Meta-Analytic and Theoretical Review of Quintessential Self-Regulatory Failure. *Psychological Bulletin,* 133, 65–94.
- Solomon, L. J., & Rothblum, E. D. (1984b). Academic procrastination: Frequency and cognitive-behavioral correlates. *Journal of Counseling Psychology, 31,* 503–509. In N. Thakkar, (2009). Why Procrastinate: An Investigation of the Root Causes behind Procrastination. *Lethbridge Undergraduate Research Journal, 4*. Retrieved from http://www.lurj.org/article.php/vol4n2/procastinate.xml
- Steel, P. (2007). The Nature of Procrastination: A Meta-Analytic and Theoretical Review of Quintessential Self-Regulatory Failure. *Psychological Bulletin*, 133, 65–94.
- Tuckman, B.W. (1990). Measuring Procrastination Attitudinally and Behaviorally. Retrieved from http://www.scribd.com/doc/14952850/1990-Tuckman-Procrastination-Scale
- Whiteside, S. P., & Lynam, D. R. (2001). The five factor model and impulsivity:
  Using a structural model of personality to understand impulsivity.

  Personality and Individual Differences, 30, 669-689. In S. Noar. &
  L. Pierce. Impulsive Decision-Making.Retrieved from http://www.education.com/reference/article/impulsive-decision-making/