



Role of Consciousness and Perceived stress on behavioral Procrastination: Mediating Role of Self-Regulation

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Abstract: Procrastination is a behavioral phenomenon that is described as delays in doing tasks and causes stress, guilty feelings, and a severe reduction in individual productivity. It also leads to social uncertainty due to non-commitment to duties and responsibilities. The purpose of this research was to determine the role of conscientiousness and perceived stress in behavioral procrastination through self-regulatory mediation. This research was a fundamental-correlational study. In this study, from among the student population of Tabriz University in the academic year 2017-18, 300 students were selected by using cluster random sampling method. To measure the data, we used Lee and Man's procrastination evaluation scale, Cohen Perceived Stress Scale and Self-Monitoring Evaluation Scale. Using structural equations modeling method, the results of data analysis showed that self-regulation can mediate the relationships between conscientiousness and perceived stress with the behavioral procrastination. In this regard, the measured model is of good fit with the theoretical model. These findings have practical implications for reducing students' procrastination and suggest that personality traits and behavioral skills play a key role in the emergence of procrastination.

Keywords: Conscientiousness, Perceived Stress, Behavioral Procrastination and Self-Regulation.

INTRODUCTION

The procrastination as a psychological phenomenon and individual behavior is orientated to postpone the immediate conduct to the future events in such a way that it results in unpleasant consequences and one can never reasonably defend his decision to delay doing things. Procrastination is an undesirable and deceitful behavior in any way that gradually becomes habitual in human existence. The consequences of delay in work are painful to the person himself, and the emotion that is caused by the delay in him is manifested in the form of shame and self-disgust. This habit is commonplace to most people and includes many other habits, such as overeating and smoking. Despite the fact that people are aware of their losses, they nevertheless ignore it. The procrastination in most cases, through postponement of work and failure to achieve the desired purpose, can have undesirable and irreparable consequences (Ellis & Knaus, 1979). Researches show two types of procrastination - behavioral and decisional (Milgerame and Tenne, 2000). In this regard, the behavioral procrastination means delaying the completion of important homework assignments (McCown & Johnson, 1991), and decisional procrastination means a deliberate delay in decision-making within a given time frame (Ferrari, 2000). Studies have shown that procrastination is not only a time management problem, but also a complex process that includes emotional, cognitive, and behavioral components.

During the extensive studies, the rate of problematic academic procrastination among the students was at least 70-95% (Steel, 2007) and the acute procrastination 20-30% (McCown and Johnson, 1991).

There are various theories about procrastination. The behavioral theories explain the procrastination in terms of reinforcement theory, that is, postponing work has for the individual a more reinforcing effect than doing that. The psychoanalytic approach identifies procrastination as a problematic behavior that reflects the underlying psychological emotions, and rather it involves feelings about the individual's family. Cognitive approaches also emphasize the role of irrational beliefs and unrealistic expectations (Kazemi, Fayyazi and Kaveh, 2010).

Researches related to procrastination have focused on the relationship between this phenomenon and various psychological factors such as low self-confidence, self-efficacy in self-regulation, personality mood and traits, goal orientations, and weak application of learning skills, and it seems that each of these variables has a role to play in predicting Procrastination. On the one hand, the underlying factors of procrastination are less well known, and in spite of growing researches, the knowledge about the causes of procrastination has yet to be developed. Hence, procrastination is left to be understood well (Steel, 2007).

On the one hand, the studies done by Dewitt & Schouwenburg (2002), Fritzsche, young & Hidson (2003), Lee (2005) and Midgley & Urdan (2001) show that procrastination is accompanied with the negative consequences, such as delayed assignments, acceleration in preparing for the exam, social anxiety, homework avoidance, escape performance, low self-regulation, low level of conscientiousness and low success, and, on the other hand, it has negative consequences for the mental health.

Although the phenomenon of procrastination is more or less instantiated in the ordinary affairs, however, one cannot overlook the role of personality traits in the occurrence of this phenomenon, because these traits determine the current and future behaviors in many individual and social situations. Hence, the personality factors are predictors of procrastination, in which two traits of conscientiousness and neuroticism show the most correlation with it. Conscientiousness in the five-factor model encompasses a wide range of traits such as the motivation for control and goal orientation. In this regard, in their research on the conceptualization of conscientiousness, Casta & McCrae (1991) have considered six factors including skill, discipline, Sense of responsibility, striving for progress, restraint, and deep-seated attitude; according to them, the conscientious individuals have the ability to maintain the controlled social motive and are able to delay their temporary satisfaction and often have long-term plans.

Scher, & oysterman (2002) reported a negative correlation between procrastination and conscientiousness. The studies of Milgram and Tenne (2000) have shown that the attribute of procrastination is related to conscientiousness. However, Lay (1995) has proposed the low relationship between these two phenomena. In addition, according to Lazarus & Folkman, the procrastination can be considered as an inappropriate strategy for coping with stress, which adds to the amount of stress; while coping correctly with the stressful factors reduces their severity and accumulation of burden of duty and tasks; any force that removes the person's mental or physical stability from the state of equilibrium and causes pressure on the person is stress, and the stress occurs when there is a threat to the individual. A threat, depending on what it means for a person, is perceived stress. In fact, the findings show that the stressors have the ability to predict procrastination, and they also are accompanied with a negative evaluation of the individuals on their abilities. In fact, it can be argued that the existence of stressors and their severity increases the feeling of lack of control over the environmental conditions and helplessness; it should be acknowledged that in these cases, as in other cases, the reduction of the self-esteem is the root causes many problems. Possibly, when a student feels incapacitated to overcome the academic questions, he postpones his assignment and academic tasks (Schwarzer & Diehl, 2000).

In a study done by Perrewe et al. (2007), the stressors have been involved in procrastination. Kiura et al. (2008) concluded in their research that with the continuation of stressful conditions, the students' emotional exhaustion increases and becomes neutrality and ultimately negative self-evaluation and negative efficacy. Studies done by Howell & Watson (2007) and Wolters (2003) show that the procrastination is associated with depression and stress.

Although the phenomenon of procrastination is affected by a variety of individual factors, the motivational states of individuals are central to their occurrence; in this respect, the process of self-regulation is of particular importance. Self-regulation is a way for individuals to use the internal and external signs to

determine the time to start, continue, and terminate the actions directed toward their goals. In this regard, Ellis and Knaus (1979) consider procrastination as a lack of self-regulation and behavioral tendency to delay what is necessary to achieve the goal. Self-regulating person is a purposeful person who uses time management techniques, meaningful and directional training, appropriate application of cognitive and metacognitive strategies and self-efficacy, and tries to achieve the goal in the best way, in line with his abilities and talents (Zimamermane, Bandura & Martinez Pons, 1992).

In addition, Howell & Watson (2007) know the procrastination as a disability in self-regulation and refer to the relationship between procrastination and self-regulation. Studies done by Howell & Watson (2007) and Wolters (2003) show that the procrastination is associated with a low level of self-regulation.

For Klassen, Lindsey & Rajani (2007), the key factor in determining the procrastination is the individual's ability to self-regulate. The results of studies done by Klassen et al. (2007) showed that self-regulation, academic self-efficacy and self-esteem are predictors of procrastination. Steel (2007) emphasized the role of self-regulation in procrastination. But there are other studies in this area that show that the self-regulation results in the length of the time and the problem-solving process through the long-term targeting and overall assessment of the situation; it ends up with the procrastination of the individual in the urgent situations (Elliott, 2005). Now, considering that the phenomenon of procrastination in various forms has been infused with everyday life of human beings and has imposed unintended and irreparable harm and consequences on the people of the society (Kazemi, Fayyazi and Kaveh, 2010), the prevalence of this phenomenon is inevitable in all strata of human societies; so it imposes many costs on individuals over the years and has shone on various areas of human life, including work, education, family and social affairs (Steel, 2007). It has caused numerous disturbances and psychological injuries so that every day it increases its destructive effects on individual and social aspects of life (McCown & Johnson, 1991). Following this, the managers and psychologists spend a lot of money each year to reduce and control their negative effects in order to reduce the negative impact of this phenomenon on the individuals (Shafran & Mansell, 2001). Hence, nowadays, the subject of procrastination has influenced the growing tension as a result of the sense of distress caused by procrastination, so that it constitutes a large part of the educational, work, family and social problems; hence many efforts have been done for the etiology of this phenomenon in recent decades in order to identify the role of psychological and sociological factors in procrastination (Sheikh Islami, Dortaj, Delawar and Ebrahimi, 2014). In this regard, the emphasis has been placed on the role of personality traits such as conscientiousness and perceived stress. There are numerous contradictory findings about the relationship between these two components and the procrastination; eliminating these contradictions requires new researches.

On the other hand, because the etiology of the procrastination shows that special factors, especially self-regulation, can reduce the amount of procrastination and in some cases lead to a relative improvement in this behavior (Howell & Watson, 2007), the concept of self-regulation seems to be of such a role and is able to play a role between conscientiousness and perceived stress on the one hand and the procrastination as a mediating factor on the other.

Accordingly, by confirming the mediating role of self-regulation, it is possible to provide an appropriate field for advising and even counseling counselors and individuals to emphasize on psychological interventions on strengthening self-regulation in individuals in order to enable individuals to overcome this behavior.

Considering that in previous studies, the role of self-regulation as a mediating factor between conscientiousness and perceived stress and procrastination has not been studied, meaning that each variable has been examined separately, the present research studied these variables as a whole. Given the theoretical framework and the research records mentioned, the purpose of the present research was to answer the question of whether self-regulation can mediate the relationship of conscientiousness and perceived stress on the one hand and the procrastination on the other.

Method

Statistical population, sample and method of implementing research:

300 students were selected through multi-stage cluster sampling. In this regard, 6 faculties of the University of Tabriz were randomly selected and from each of them 2 classes were selected again and then all students of the classes selected were considered as the final sample. The purpose of the research was explained to the sample group and provided with questionnaires.

Measuring tool

Lee and Man's General Procrastination Scale (GPS). This scale was created by Lee in 1986 to investigate behavioral procrastination and has 20 items. For each item, there is a 5-option spectrum from certainly false (score zero) and certainly correct (score 4). Hosseini and Khayer (2009) translated it and reported its Cronbach alpha coefficient by 0.80. For that, they have reported a general factor for the whole scale.

B-Decisional Procrastination Scales (DPS): This scale was made by Mann (quoted from Sadat Hosseini and Khaeyr, 2009) in 1982 to measure decisional procrastination and has 5 items. For each item, there is a 5-option spectrum from definitely false (score zero) and definitely correct (score 4). This scale has been reported to be of a desired validity and reliability. Hosseini and Khayer (2009) translated it and reported its Cronbach alpha coefficient by 0.78. For that, they have reported a general factor for the whole scale.

Conscientiousness evaluation Scale: Subscale of conscientiousness of Neo Five-Factor Questionnaire: The Neo Questionnaire was created in 1985 by McCary and Paul Costa. The NEO-FFI personality questionnaire was implemented by McCary and Costa on 208 American students in a three-month interval; its coefficients were from 0.83 to 0.75, and the long-term validity of this questionnaire has been evaluated. A long-term, 6-years study on the scales of neurosis, extraversion and openness to experience has shown coefficients of validity of 0.68 to 0.83 in personal reports and in couples' reports. The coefficient of validity of the two factors of adjustment and conscientiousness over two years was 0.79 and 0.63, respectively. In this study, using Cronbach's alpha, the coefficient of validity of the questionnaire is equal to 0.78. For evaluation of conscientiousness, 12 items related to the conscientiousness dimension of the Neo Five Factor Questionnaire were used. Items are based on the 5'grad Likert scale from *I totally agree* to *I totally disagree* (McCary and Cossta, 1983 quoted by Garousi Farshi, 2001).

Cohen's Perceived Stress Scale: This scale was developed by Cohen et al. in 1983 and has 3 versions of 4, 10 and 14 articles used to measure perceived stress in the past month. Cohen et al. (1983) calculated the Cronbach's alpha for this scale by 0.84 and 0.86. In the studies conducted by Ghorbani et al (2002), the Cronbach's alpha value in the Iranian sample was 0.81. In another study done by Salehi, the alpha value of 0.75 was reported.

Self-monitoring Evaluation Scale: This test was developed by Marc Schneider in 1974 to evaluate the level of personal supervision of individuals. This test has 25 questions and the subject must choose to agree and oppose any of these expressions by choosing a response or a false answer. The reliability obtained on the basis of the internal consistency coefficient has been reported by the author of the test by 0.66.

Findings

The descriptive findings of the present research have been shown in Table 1.

Table 1. Descriptive indices of research variables

Group Variable	Men			Women		
	Mean	Standard deviation	Number of participants	Mean	Standard deviation	Number of participants
Behavioral procrastination	41/12	14/12	114	38/12	12/11	164
Decision procrastination	9/21	3/12	114	7/21	3/02	164
General procrastination	50/23	17/24	114	45/33	15/21	164
Conscientiousness	36/15	12/91	114	41/19	14/17	164
Perceived stress	34/19	9/29	114	28/19	7/63	164
Self-regulation	12/16	4/25	114	10/22	4/12	164

Next, the correlation matrix of the research variables has been shown (Table 2).

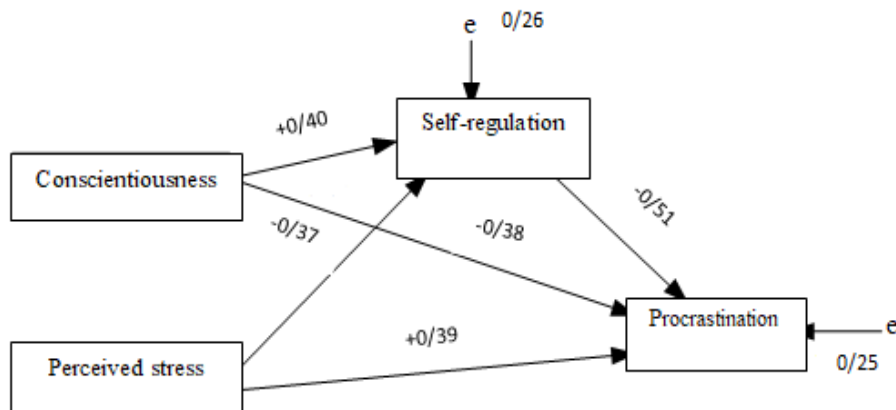
Table 2: Correlation matrix of the variables under study

Variable	1	2	3	4
Procrastination	1			
Conscientiousness	-0/52**	1		
Perceived stress	0/50**	0/22'	1	
Self-regulation	-0/57**	0/47**	-0/49**	1

**→ P < 0.1, *→ P < 0.5

Causal path model (1): Summary of the analysis of the causal relationships of the variables under study
 Correlation matrix indicates a negative relationship between conscientiousness and self-regulation and procrastination, as well as the relationship between perceived stress and conscientiousness is positive, and the relationship between conscientiousness and self-regulation is positive and the relationship between perceived stress and self-regulation is negative.

In order to investigate the causal relationships of conscientiousness and perceived stress with behavioral procrastination through the self-regulation mediation, the path analysis was used. To analyze the path of causal relationships among the variables under study, first, the variable of procrastination was defined as dependent variable, the variable of self-regulation as the mediating variable, and the variables of conscientiousness and perceived stress as independent variables and included in the data analysis system. The path analysis results have been presented in the causal model (1):



Procrastination, Conscientiousness, Perceived stress, Self-regulation

TLI	NFI	CFI	AGFI	GFI	P	χ^2/df	Df	χ^2	MSEA
0/91	0/90	0/91	0/92	0/94	0/001	3	332	196	0/03

Figure 1:

The contents of the causal model (1) show that the measured model is desirable with the conceptual and theoretical model, since the Root mean square error of approximation (RMSEA) is at a desirable (less than 0.05) level and the ratio χ^2/df is also optimal (less than 5). Additionally, the Goodness of Fit Index (GFI), the adjusted goodness of Fit Index (AGFI), Comparative fit Index (CFI), Normed Fit Index (NFI) and Tucker-Lewis Index (TLI) were in desirable level (0.90) and more). Therefore, it can be deduced that self-regulation can mediate significantly the relationships of conscientiousness and perceived stress with the procrastination.

In order to study the direct effects of the outputs of causal path model (1) and the corresponding test (t), the table 3 has been used.

Table 3- Direct effects of independent variables on procrastination

Independent variable	Dependent variable	Value of effect	Estimation error	T	Significance level
Conscientiousness	procrastination	-0/38	1/12	-4/26	0/001
Perceived stress	procrastination	+0/39	1/09	4/59	0/001
Self-regulation	procrastination	-0/51	1/02	6/02	0/001
Conscientiousness	Self-regulation	0/40	1/08	4/65	0/001
Perceived stress	Self-regulation	0/42	1/06	5/26	0/001

The results of Table 3 show that conscientiousness can negatively and significantly estimate 0.38 of procrastination changes; the perceived stress is able to positively and significantly measure 0.39 of the procrastination changes, as well as the self-regulation is able to negatively and significantly determine 0.51 of the change of procrastination; the conscientiousness can positively and significantly determine 0.40 of self-regulation changes, and also the perceived stress can positively and significantly determine 0.42 of self-regulation changes.

In order to examine the significance of intermediate relationships, Bootstrap test has been used and its results are presented in Table (4).

Table 4. Self-regulation mediating effects in the relationships between independent and dependent variables

independent variable	Mediating variable	dependent variable	Bootstrap		Bias value	Estimation error	Value of effect	Significance level
			Upper limit	Lower limit				
Conscientiousness	Self-regulation	Procrastination	-0/2511	-0/1972	0/008	0/0012	0/0012	0/0012
Perceived stress	Self-regulation	Procrastination	-0/2742	-0/2251	0/007	0/0011	0/0011	0/0011

The results of the above table show that conscientiousness can explain negatively and significantly through the self-regulation 22.2% of the changes in procrastination. Perceived stress is also able to explain negatively and significantly 24% of procrastination change through self-regulation.

Discussion

The purpose of this research was to determine the role of conscientiousness and perceived stress in behavioral procrastination through the self-regulation mediation. The findings of this research showed that self-regulation can mediate the relationship between conscientiousness and perceived stress with behavioral procrastination. On the other hand, the direct effect of conscientiousness on procrastination was statistically significant. That is, the conscientiousness can negatively explain procrastination changes. So, the higher the level of conscientiousness, the lower the amount of procrastination.

This finding was consistent with the findings of Sher and Sterman (2002), along with the findings of Lee, Kelly and Edwards (2005) and Milgram and Tenne (2000). In this regard, Hashemi, Mostafavi, Mashinchi and Badri (2012), in their research, stated that the conscientiousness is the personality traits of the procrastinating individuals; on the other hand, this finding is inconsistent with the findings of Lay (1995), based on the fact that there is little relation between conscientiousness and procrastination.

In explaining these findings, it can be stated that a conscientious person is a competent, punctual and reliable person with the discipline. The index of conscientiousness, also known as the "desire for success", can be understood as the power of the very active planning, organization and performing the assigned tasks desirably (Atashi, 1998). The conscientious individuals are goal-oriented, and determined. They tend to carefully think about before they go to work and carefully consider ethical principles in their duties and responsibilities (Mahmoudi Kia, Baharloo and Arshadi, 2013).

Persons with high conscientiousness are people with strong will, purposeful, precise, future-oriented, and motivated in achievement of goals. In general, the conscientiousness describes the power of controlling

impulses, in a way that the society considers to be desirable and facilitates the task-oriented and purpose-oriented behavior. Conscientiousness include features such as pre-operative thinking, delaying satisfaction of desires, observance of rules and norms, and organizing and prioritizing assignments (Ezey, Khodapanahi, Fathi Ashtiani, Sabeti, Ghanbari, Sadat Seyed Mousavi, 2009).

People who have a specialty of conscientiousness, due to high responsibility, pre-operative thinking, observance of rules and norms, organization and prioritization of duties, are not weakened in the beginning, completion and continuation of the duties, and their procrastination is less.

Also, data analysis showed that the direct effect of perceived stress on procrastination was statistically significant, meaning that perceived stress can positively explain the changes of procrastination. That is, the higher the level of perceived stress, the higher the level of procrastination also.

These findings are consistent with the findings of Tan (2008), Perrewe & Hochwarter (2007), Fuschia & siveis (2006), Tix & Baumeister (1997), Tix & Baumeister (2010) and Sheikholeslami, Dortaj, Delawar and Ebrahimi Ghavam (2014).

In explaining the relationship between perceived stress and procrastination, it can be argued that those who perceive high stress due to high restlessness have difficulty in the field of precision, attention, memory, attention concentration, decision making, and subsequently influenced by the effects of stress, the negative thoughts increase in them; they avoid anxious situations, and felt frustrated, desperate, and unsuccessful, and subsequently refused to commence their duties and refuse to continue, which is why procrastination is rising in them.

Also, data analysis showed that self-regulation is able to negatively explain procrastination changes. That is, the more the self-regulation in people, the lower the amount of procrastination.

These findings are consistent with Millgram and Tenne (2000), Pintrich (2000), Kandemir (2014), Holy (1382), Schouwenberg (2004) and Wolters (2003), based on the fact that people who have a high self-regulation have a lower degree of procrastination.

In explaining the relation of self-regulation with procrastination, it can be stated that individuals who have the self-regulating feature do not lose their ability to plan and execute the expected activities in order to achieve the desired goals in starting and completing their duties, and the amount of procrastination is lower in them.

Data analysis showed that conscientiousness can positively explain the self-regulation changes. So as the level of conscientiousness in the individuals gets higher, the self-regulation level also increases.

In explaining these findings, it can be stated that those with a characteristic of conscientiousness, in the first place due to the conscientiousness, are somehow under the rule of conscience and consistently adhere to their ethical principles and faithfully fulfill their obligations; due to their self-sufficiency, they consider themselves self-prepared and capable of coping with the tough conditions of life and their plans. Since this procedure has the highest correlation with self-esteem and internal control center, these characteristics make the conscientious individuals have a positive and constructive attitude towards themselves and are able to plan the goals of their life, so their self-regulation is high in them.

Also, data analysis showed that the perceived stress can positively explain self-regulatory changes. In that way, the higher the level of perceived stress in individuals, the more the self-regulation in them.

In explaining this finding, one can cite the theory of Yerkes & Dodson (1908) that experiencing stress is somewhat beneficial and results in improved performance, and therefore the positive relationship between perceived stress and self-regulation follows the rule that as the stress of an individual increases, experienced stress becomes a challenge for a person; he/she uses his/her abilities and to advance in the direction of planning and management of the goal, which makes it possible to excite person in the direction of regulating behaviors and, consequently, adjusting the outcomes of his/her behavior in a variety of domains.

Regarding the mediating role of self-regulation between the perceived stress and procrastination, the results showed that the effect of perceived stress through self-regulation on the procrastination is significant, meaning that the perceived stress affects the growth of self-regulation; the self-regulation is capable of mediating the perceived stress and procrastination. In order to explain this finding, Cobb- Clark (2014)

suggests that self-regulation is like self-control that encompasses it. According to cognitive social theory, the self-regulation is situation-dependent; so the self-regulation is not a general characteristic that is the same in all situations, but depends on the situation; in different situations we are witnessing its different levels, in such a way that the stressful situations affect the individual's self-regulation, because the stressful situation, agitation and restlessness of that situation create problems in the field of Accuracy, Attention, Focus, and Decision Making. Due to this, the individual cannot have the self-regulation required for his/her behaviors. So, the perceived stress can affect self-regulation and cause the procrastination in the individual. Due to the fact that there is such a relationship between the perceived stress and self-regulation, one can claim that self-regulation is an intermediary between perceived stress and procrastination.

Also, regarding the mediating role of self-regulation between the conscientiousness and procrastination, the results showed that the effect of conscientiousness on the procrastination through self-regulation was significant. That is, the conscientiousness affects self-regulation and the self-regulation can mediate the relationship between conscientiousness and procrastination. The lower level of conscientiousness influences self-regulation and increases the amount of procrastination in the individual. By examining self-regulation, it is possible to explain the role of this feature in the relationship between procrastination and conscientiousness.

If any of the elements of conscientiousness influencing the self-regulation, that is, the organization and execution of tasks, the ability to control impulses and tendencies, the application of the plan in the behavior to achieve goals, order and trying for success and self-restraint exist in the individual, they will lead to the growth of self-regulation and decreasing procrastination. However, if one of these elements does not exist, there is no chance of creating a strong self-regulation and the possibility of an increase in procrastination in the individual (Van, 2004).

The initial source of high self-regulation results from a high level of conscientiousness. In other words, failing to create self-regulation in a person means that the person will have difficulty in planning, executing and completing his own activities, and the procrastination is calculated as a temporary enjoyable act which is a result of a low level of conscientiousness in the individual (Vallerand, 1995).

Due to the fact that there is such a relationship between conscientiousness and self-regulation, one can claim that self-regulation is a relationship between conscientiousness and procrastination.

Considering the findings of the research showed that the conscientiousness, perceived stress and self-regulation play a decisive role in predicting changes in procrastination, it is suggested that stress management methods, behavioral self-regulation methods, motivation, emotions and processes of attention are taught to the students to reduce procrastination. The longitudinal studies are suggested in order to infer the causal relationships and to clarify the time sequence between the variables of the research. In this research, like other researches, using self-report questionnaire was part of the constraints that could inadvertently undermine the validity of the findings.

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