



Measuring Academic Procrastination: Scale Development and Validation

Akademik Erteleme: Ölçek Geliştirme ve Doğrulama

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Abstract. The present study was intended to construct and validate the innovative scale to measure the academic procrastination of university students. The development and validation process was carried out in different steps. Three hundred twenty two students were selected via convenient sampling technique for carrying out the factor analysis. The results of exploratory factor analysis verified that academic procrastination can be decomposed into four factors viz: time management; task aversiveness; sincerity; personal initiative. Furthermore, investigator found evidence for convergent validity, showing that dimensions viz: time management, task aversiveness, sincerity and personal initiative were positively correlated with total score of academic procrastination scale. The internal consistency indices, alpha coefficient (0.889) is adequate for the entire academic procrastination scale. So finally results revealed that the scale possesses adequate psychometric properties. Hence it could be considered the self-administered scale assessing academic procrastination among university students.

Keywords: Academic procrastination, time management, task aversiveness, sincerity, personal initiative

Öz. Bu çalışmanın amacı üniversite öğrencilerinin akademik ertelemelerini ölçmek için yenilikçi bir ölçek oluşturulması ve geçerliliğinin sağlanmasıdır. Geliştirme ve doğrulama süreci farklı adımlarda gerçekleştirildi. Faktör analizini yapmak için uygun örnekleme tekniği ile üç yüz yirmi iki öğrenci seçildi. Verilerin analizi, akademik ertelemenin dört faktöre ayrılabilirliğini doğruladı: zaman yönetimi; görev isteksizliği; samimiyet; kişisel girişim. Dahası, araştırmacı, yakınsama geçerliliği için kanıtlar buldu; bu, boyutların, zaman yönetimi, görevden kaçınma, samimiyet ve kişisel inisiyatiflerin, toplam akademik erteleme ölçeği puanıyla pozitif korelasyon gösterdiğini gösterdi. İç tutarlılık endeksleri, alfa katsayısı (0.889) tüm akademik erteleme ölçeği için yeterlidir. Sonunda sonuçlar, ölçeğin yeterli psikometrik özelliklere sahip olduğunu ortaya koydu. Bu nedenle, üniversite öğrencileri arasında akademik ertelemeyi değerlendiren öz-denetim ölçeği olarak düşünülebilir.

Anahtar kelimeler: Akademik erteleme, zaman yönetimi, görevden kaçınma, samimiyet, kişisel inisiyatif

INTRODUCTION

Procrastination is defined as a behavior of unnecessary deferring of beginning or finishing any tasks, resulting in feeling unhealthy emotions such as depression, blame, shame and anxiety. The general tendency of postponing or delaying different task is referred to as procrastination. Procrastination affects millions of people and is a detrimental problem which frequently affects individual's performance, productivity and well-being (Sirois, Melia-Gordon & Pychyl, 2003; Steel, 2007; Stead, Neufeld & Shanahan, 2010). A form of procrastination, academic procrastination looks to more commonly constitute a difficult of epidemic proportions among students (Duru, & Balkis 2009; Johnson, McCown, & Ferrari, 1995; Demir, Ferrari, & Ozer, 2009; Rothblum & Solomon, 1984). It is a very common problem among students. Students have lots of tasks to do however they do not sufficient time. Procrastination is globally observed and considered disapproving everywhere; it impacts the individual's daily routine in negative way (Schmitt, 2008; Morelli, 2008; Hoover, 2005; Letham, 2004).

Academic procrastination, basically regarded as a bad habit, is an important issue that has been of interest to many researchers in recent years, (Chase, 2003) and is seen as a behavioral problem that many adults experience in their regular work (Janssen & Carton, 1999), especially in tasks that must be done in a certain time period (Oweini & Harray, 2001, as cited in Akinsola, Kolawole Adedeji & Tella, 2007). Procrastination on academic tasks is a common problem among students, and it is one of the most significant reasons of students' failure to learn and to attain academic achievement (Balkis, Duru & Duru, 2009; Solomon & Rothblum, 1984).

Various researches draw attention to the surroundings under which students are probably to procrastinate. For example, when examined to report why they procrastinate, university students presented causes associated to fear of failure, time management and task aversiveness (Rothblum & Solomon 1984). Furthermore, study revealed that academic procrastination could stem from fewer work on the task (Buley & Sadler, 1999), self-regulation failure (Ferrari, 2001), low self-efficacy (McCarthy, Skay, & Haycock, 1998), low task competency (Marshevsky, Sadeh, & Milgram, 1995), excessive usage of social networking sites (Gupta et al. 2018), lack of motivation (Hooda & Saini 2016), high level of academic achievement stress (Ferrari, 1991a; Hewitt, Flett, & Martin, 1995; Toubiana & Milgram, 1999; Solomon & Rothblum, 1984), rigid and stiff beliefs (Alice, Albert James, Null, & William 1985) and non-self-determined educational motivation (Koestner, Vallerand, & Sene'cal, 1995). Furthermore, academic procrastination may be influenced by personality characteristics such as socially prescribed perfectionism, trait of procrastination (Sacks & Sadler, 1993), concern for a favorable public impression (Ferrari, 1991b), and low levels of conscientiousness (Lay & Schouwenburg 1995).

Literature Review

Procrastination seems a behavioral trait, attitude or tendency which Shah (2000) termed as irresolute state missing in will power and energy to do a work. Learners become incapable to do the accurate work at the accurate time leaving it for some other time; that might result in failure plummeting them (Milgram 1991) in a state of emotional commotion. It may have an influence on student's learning and their personality traits. Steel (2008) pointed out that procrastination impacts the distractibility, impulsiveness, self-efficacy, organizational behavior and self-control of the students. It makes students lazy and inert emerging postponing propensity in them; whichever they sense unwillingness in taking creativities or fear to beginning an assignments or a work. Various investigators have found a number of secondary and primary difficulties related to academic procrastination, e.g. low performance of students and their improved psychological and physical problems (Pychyl & Ferrari (2008), anxiety (Onwuegbuzie 2004; & Lay, 1995), irresponsibility, misunderstanding and irregularity(Rivait, 2007).

Academic procrastination is a special form of procrastination that happens in the educational situations. It contains to carry out an academic task such as, completing a school related project, the weekly reading assignments, studying for examinations, or undertaking writing a term paper, but for one cause or another, failing to inspire oneself to do so within the predictable time frame (Gross, & Ackerman, 2005). In a similar way Murakami and Solomon

(1986) outline this idea as delaying academic responsibilities like as delaying homework and preparing for exams constantly or sometimes. Academic procrastination has been described by Senecal, Julian, and Guay (2003) “as an irrational tendency to delay at the beginning or completion of an academic task”. In similar lines academic procrastination is an irrational tendency to delay at the beginning or completion of an academic task (Senecal, Julian, Guay, 2003. p.135 & Yong, 2010).

Ellis and Knaus (2000) worked on procrastination and explained as the aspiration to evade an activity, the promise to get it late, and the use of explanation creating to explain the deferral and avoid blame. Popoola (2005) states that procrastination as a dispositional trait which has emotional, behavioral and cognitive components. Dryden (2012) describes that academic procrastination as a problem perceived in areas like as doing homework, preparing for examinations, conducting meetings or projects with academic advisers and so on. In another way, McCown, Johnson, & Ferrari, (1995), described academic procrastination as the behavior of evading educational responsibilities which causes student’s educational failure. Therefore academic procrastination behavior means to delay academic duties in a way that causes academic stress, failure and unhappiness. Similarly, it can be said that, academic procrastination refers to an irrational tendency of university students to delay at the beginning or completion of an academic task, homework, project work and co-curricular activities.

Theoretical Framework

After studying the previous literature of academic procrastination it was found that several measurements have been developed to investigate academic procrastination. One of the instrument by General Procrastination scale by (Lay, 1986). The General Procrastination scale has acknowledged criticism on the grounds that Lay (1986) defined procrastination exclusively as a lack of goal attainment. Another scale Procrastination Assessment Scale of students standardized by Rothblum & Solomon (1984) is a broadly used scale to measure academic procrastination like as amount of time spent for studying. The main drawback of this scale is that it measures procrastination tendencies in merely six potentially limited areas of academic attainment such as weekly readings, studying, writing term papers, general academic tasks, attending meetings and administrative tasks. Furthermore the academic procrastination scale by Choi and Moran (2009) has been used in some academic contexts. The major limitation of this scale is that it specifically does not measure academic procrastination. Moreover Tuckman (1991) standardized the Procrastination Scale that significances to assess task avoidance to academic activities. The main subject of contention resulted in the use of a 4-point Likert scale. Such type of scale can affectedly confine the range of responses and endorse a greater internal consistency coefficient with a poorer variability of procrastination. Another instrument by Choi and Chu (2005) recommended two diverse constructs related to procrastination that is active procrastinators and passive procrastinators. The study fails to afford theoretic proof on the development of the two types of procrastination nor does it provides support for the constructs of procrastination.

After extensive review of literature, the following four dimensions were finally included in this scale. A brief description of each of these dimensions is as under:

Time management: The time management is the process or act of exercising and planning sensible control over the quantity of time spent on particular activities, especially to increase productivity, efficiency or effectiveness.

Task Aversiveness: Task aversiveness makes an individual to put off things which he/she doesn’t like to do. As a result of this habit, procrastination occurs. It is caused by qualities of the task and individual’s feelings of physical or emotional discomfort, when he/she does the work. This happens because they consider the task as boring, frustrating, unpleasant, wearisome, difficult or resentful.

Sincerity: It reflects one’s seriousness and dedication towards an assigned task, a person who is sincere cannot be distracted easily by the external factors or circumstances.

Personal initiative: Personal initiative refers to pro-active and self-starting approach to carry on tasks and persistently working to overcome barriers and setbacks.

At present, researchers have developed number of academic procrastination measures but in our context no such scale has been constructed; this study will fill up the gap and present a construct in Indian scenario. With this measure researchers will come to know about the level, and the reasons of academic procrastination among university student because procrastination is a very common occurrence among students than ever, they have lots of things to do but they do not have sufficient time, and have lack of seriousness. The review of the literature demonstrates that numerous researches have been done on this said construct but it is essential to confirm the validity of the constructs even if well-established measures are involved (Hair et al., 2010). We designed a study to explicitly explore the academic procrastination behavior among university students. This paper is an attempt to fill the gap by developing and testing a new scale to measure academic procrastination. The study follows highly reliable and valid scale development procedures of Hinkin (1995) and Churchill (1979).

METHOD

Item Generation Procedure

Investigators have used deductive method to create the items for the scale development as per the references of Hinkin (1995). To create the proposed aspects of academic procrastination, a widespread and systematic review of literature dealing with the proposed aspects was conducted. Investigators originally outlined 46 items from the widespread review of literature assessing academic procrastination. Investigators used a five point Likert scale assessing academic procrastination with 5 as “strongly agree” and 1 as “strongly disagree”. Some items of the academic procrastination scale are (1) I generally say to myself that I will complete my assignments by tomorrow. (2) I do my assignments regularly to be punctual with my task. For the construct Task aversiveness (1) I discuss difficult concepts with my peers. (2) I complete easy tasks first then difficult ones. For the construct sincerity (1) I hate myself if I don’t work on assignments. (2) I feel bad when I postpone preparing for tests and finally for the construct personal initiative (1) I approach my teachers for help If I do not know how to do a task. (2) I receive appreciation from my parents for completing academic task on time.

Content Validity

In the beginning a list of 63 items was prepared by going through available tests and other relevant literature. The list was given to 9 experts to review the suitability and relevancy of items. The experts comprised experienced teachers of education, technology and psychology. For the purpose of critical evaluation, accuracy, coverage and relevance of content in the present scale by requesting to adopt following criteria (“Mark ‘E’ for essential; Mark ‘U’ for useful but not essential; Mark ‘N’ for not necessary”.) as per the recommendations of Lawshe, (1975). In the preliminary screening, experts recommended removal of 12 statements, as they were ambiguous, vague and overlapping. The scale was reviewed and further sends to the subject matter experts. The scale was again assessed on various instances by the experts, and 5 more statements were removed. The final puddle of 46 statements was once again revised by the experts and this time no item was deleted. The experts were of the opinion that the statements of scale are completely satisfactory and relevant to measure the academic procrastination of students.

Respondents

The sample constitutes of the students of different universities of Jammu and Kashmir in India. Investigators have employee convenience sampling approach to select the respondents. The sample of the study was 322 university students. Initially, out of three divisions in Jammu and Kashmir, two divisions were selected randomly. Then universities in the division were selected randomly. From these universities several students were picked up conveniently as respondents.

The sample size for participants was more than the acceptable threshold for factor analysis which was equal to 320 (Heir et al. 2010).

RESULTS

Exploratory Factor Analysis

EFA involves grouping similar variables into dimensions. This process is used to identify latent variables or constructs. The purpose of EFA is to reduce many individual items into a fewer number of dimensions. EFA is used to simplify data, such as reducing the number of variables in regression models. Moreover, EFA provides information about the amount of constructs required to represent the data. EFA helps discover the probable original factor construction of a set of observed variables not having imposing a predetermined structure on the consequence (Child, 1990). EFA is a variable reduction technique which identifies the number of latent constructs and the underlying factor structure of a set of variables. It hypothesizes an underlying construct, a variable not measured directly, estimates factors which influence responses on observed variables and allows you to describe and identify the number of latent constructs (factors). We explored the factors of academic procrastination through exploratory factor analysis. The factor analysis revealed a four factor structure, explaining 71.44% of the variance (Streiner, 1994).

The next consequent step in the scale modification is to organize and carryout the exploratory factor analysis. Investigators applied factor analysis using SPSS 21.0. Researcher explored the factors of academic procrastination through exploratory factor analysis. Numerous iterative cycles of factor analysis were conducted on the data set. The total variance explained and number of factors extracted were examined after each iteration. Factors with low communalities and which didn't correlate were deleted with the purpose of refining the factor structure so as to get a matrix with much clear loadings. The researcher has used principal component matrix (PCA) in this study and for rotation has used Varimax method (Osborne, and Costello, 2005). Investigator checked the factorability of the 46 statements of academic procrastination. After performing exploratory factor analysis the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was found .826 (The minimum Kaiser-Meyer-Olkin (KMO) for a good factor structure should be 0.60 (Tabachnick and Fidell, 1996) and the Bartlett's test of sphericity was significant 10738.711, $p < .001$). A negligible significance level was shown by Bartlett's test of sphericity. Therefore both these measures suggest that sample is adequate for performing factor analysis. So the detailed report is presented in Table 1.

Table 1. KMO and Bartlett's test

		.826
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		
	Approx. Chi-Square	10738.711
Bartlett's Test of Sphericity	Df	253
	Sig.	.000

Researchers used SPSS 21 to conduct the exploratory factor analysis on 46 items. Researchers applied factor analysis using SPSS 21.0. Principal component matrix was used for rotation of factors, researchers have used Varimax Costello and Osborne (2005). The minimum cut of criterion for the items was: Factor loading ($<.50$), Communalities ($<.40$) and cross loading ($>.40$). A negligible significance level was shown by the Bartlett's test of sphericity. But several iterative layers of factors analysis were applied to the data set with the aim of improving the factor structure. This iterative process was repeated several times which resulted in the deletion of 23 items as their factor loading and communality value was less than 4.

Thus the factor analysis confirmed a four factor structure, clarifying 71.44% of the variance and all items loading above .40. (Acceptable item loading of above sample 300 is 0.40 (Heir et al 1995). The first factor consisted of items related to the time management (6 items),

another factor contained of items related to the task aversiveness (5 items), third factor consisted of the items related to sincerity (7 items), and fourth factor consisted of the items related to personal initiative (5 items).The factor loadings of the items are presented in Table 2.

Table 2. Factor structure of the items of academic procrastination

Items	Components			
	Time Management	Task Aversiveness	Sincerity	Personal Initiative
Item 06	.946			
Item 01	.590			
Item 05	.939			
Item 10	.976			
Item 20	.943			
Item 24	.972			
Item 41		.960		
Item 02		.976		
Item 36		.933		
Item 26		.957		
Item 19		.973		
Item 40			.498	
Item 15			.721	
Item 08			.942	
Item 09			.484	
Item 11			.934	
Item 12			.779	
Item 46			.923	
Item 07				.514
Item 23				.538

Item 39	.439
Item 43	.438
Item 44	.743

Confirmatory Factor Analysis

Confirmatory factor analysis according to Sorbom & Joreskog, (2004) is a different case of Structural Equation Modelling which is also recognized as linear structural relationship model. The confirmatory factor analysis was applied using SPSS Amos 22 version to the four factors extracted in exploratory factor analysis. The indices of the model were (CMIN/DF=2.244, Comparative Fit Index (CFI) =.966, Goodness Fit Index (GFI) =.918, AGFI=.889, Root Mean Square of Approximation (RMSEA) =.062 and Chi-square=253.6 ($p>0.01$). Figure 1 provides a holistic view of the Confirmatory Factor analysis model.

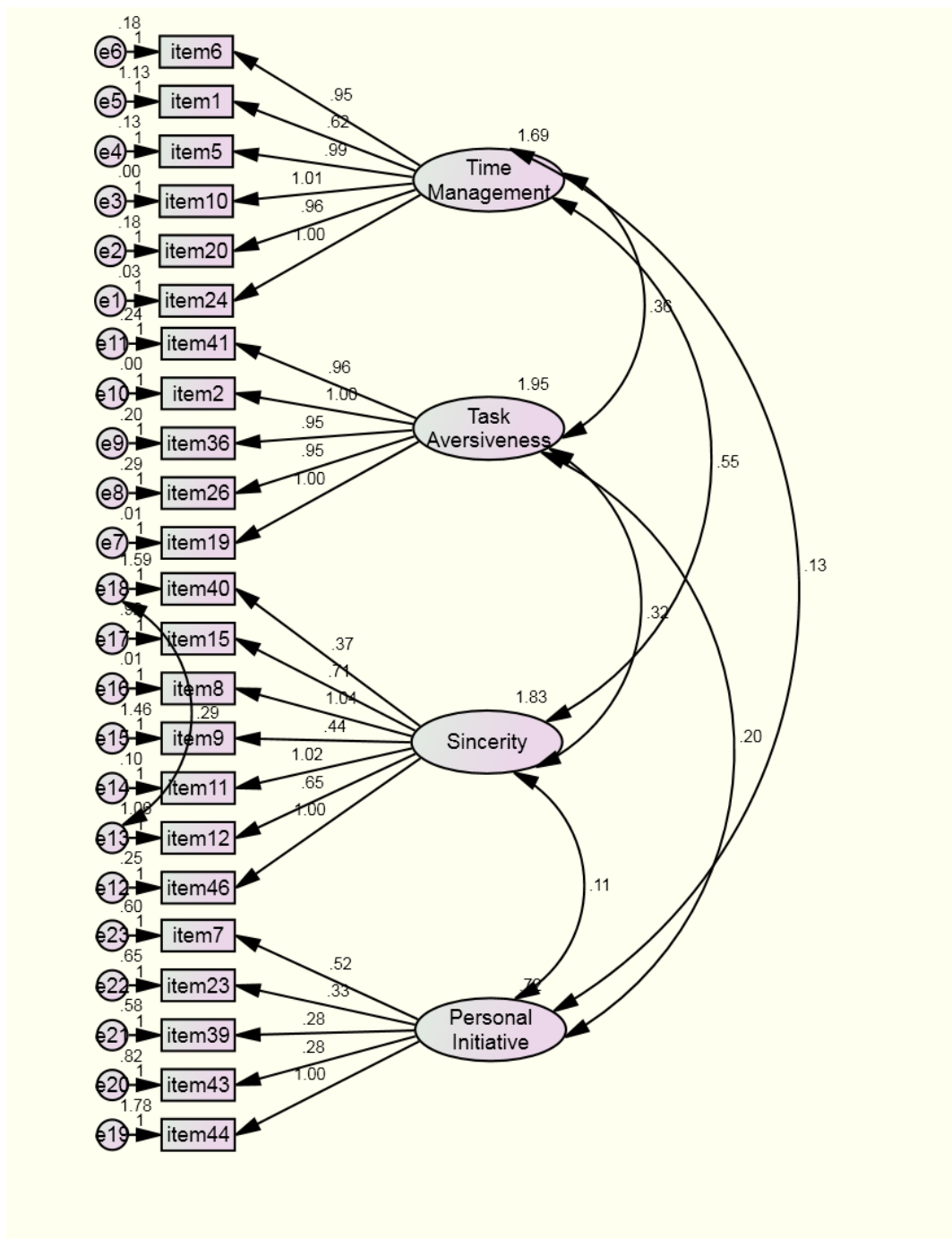


FIGURE 1. Confirmatory factor analysis

Reliability Analysis

The reliability of the test was determined by Cronbach's alpha coefficient. The Cronbach's alpha coefficient is used to measure the internal consistency. The final set of statements was checked for internal consistency using SPSS-22 version. The Cronbach's alpha coefficient for the final set of statements was found out to be .889 (Table 3). This illustrates a high degree of internal consistency among the items. The thumb rule approved by George & Mallery (2003) for the interpretation of Alpha is: "0.80 to 0.9 Good; and above 0.9 Excellent". For this scale Cronbach's alpha indicated good internal reliability for academic procrastination ($\alpha = .889$). The reliability is presented in Table 3.

Table 3. Reliability statistics

Cronbach's Alpha	Number of Statements
.889	23

Convergent Validity

Pearson's coefficient of correlation revealed higher levels of significant positive correlations of all dimensions of Academic Procrastination Scale (Time Management, Task Aversiveness, Sincerity and Personal Initiative) with total score of Academic Procrastination Scale. When interrelationship of dimensions and total score can be calculated as suggested by (Overbeek, Scholte, de Kemp, & Engels 2007) are convergent validity. So, the convergent validity of academic procrastination scale ranges from .657 to .731 which is also shown in table 4.

Table 4. Convergent validity of academic procrastination scale

Measure	Time Management	Task aversiveness	Sincerity	Personal Initiative	Total Score of Academic Procrastination
Time Management	1	.503**	.268**	.303**	.731**
Task Aversiveness		1	.323**	.306**	.775**
Sincerity			1	.410**	.657**
Personal Initiative				1	.700**

**Significant at 0.01 level

DISCUSSION AND CONCLUSION

The purpose of present investigation was to construct and validate an instrument of academic procrastination scale. The aim of this study was to explore psychometric properties of academic procrastination scale developed by investigator. The study has theorized a broad literature review of the existing state of academic procrastination in academic context. A rigorous methodological procedure was carried out to develop and validate measurement of academic procrastination based on qualitative assessment. In the initial stage, 63 statements were constructed by discussing and taking opinions from research experts and university teachers to review the suitability and relevancy of items. Moreover, the expert view was analyzed, 17 items were deleted due to ambiguity or dual meaning, 21 items were modified and 25 items retained. After that, try-out was carried out by employing convenient sampling technique. After completing the try-out, exploratory factor analysis was carried out on 46 statements. The exploratory factor analysis exposed that academic procrastination can be conceptualized or decomposed into 4 factors consisting of time management (06 statements), task aversiveness (05 statements), sincerity (07 statements), and personal initiative (05 statements). Similarly confirmatory factor analysis was performed to confirm the factor structure of academic procrastination scale. Finally, reliability coefficient was calculated which exhibits high degree of internal consistency ($\alpha=.889$) which is good as according to George & Mallery (2003).

So, finally scale passed all criteria like reliability, convergent validity. This study will give academicians much needed tools for the empirical research on the concept of academic procrastination which will ultimately help in bringing a fresh empirical perspective to the concept of academic procrastination.

LIMITATIONS AND FUTURE RESEARCH

Researchers have used highly valid and reliable scale development procedures by Hinkin (1995) and Churchill (1979) but still it suffers from some limitations. The first limitation is that the study measures 4 sub constructs of academic procrastination and the present scale was based on five point Likert scale development. The techniques like the exploratory factor analysis and the confirmatory factor analysis were carried out on quite specific sample sizes. In order to have better results a bigger sample size is advisable for exploratory factor analysis and confirmatory factor analysis. Future research must seek to determine this scale appropriateness for use with other populations. Moreover, qualitative study can be conducted based on this scale to expose the reasons behind procrastination. In addition further research can be conducted to determine the relationship of academic procrastination with academic performance of students.

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