

ADAPTATION STUDY OF THE STUDENT VERSION OF THE GENERAL PROCRASTINATION INVENTORY ON THE ROMANIAN POPULATION

Gabriel Roşeanu *

University of Oradea, Romania

Mihai Marian **

University of Oradea, Romania

Abstract

Procrastination is defined as an irrational tendency to delay the beginning and/or completion of different tasks. In the present study we focused on validating the student version of the Procrastination Inventory, developed by Lay (1986), on the Romanian population. A sample of 125 first year students participated in the study. Exploratory and confirmatory factor analyses indicated that from the original 20 items only 13 were adequate for the Romanian population. Two negatively correlated factors were obtained and identified as assignment procrastination and general promptness.

Keywords: procrastination scale, exploratory factor analysis, confirmatory factor analysis

Introduction

Lay (1986) defines procrastination as an irrational tendency to delay the beginning and/or completion of different tasks. Ferrari (1998) considers that procrastinators encounter difficulties in motivating themselves sufficiently (they are aware of the importance of the task). This behavior may prove to be very detrimental to the academic, professional, social and personal life of the individual. Internal consequences may include irritation, regret, despair, and

Correspondence concerning this paper should be addressed to:

* Ph.D., University of Oradea, Faculty of Socio-Humanistic Sciences, Psychology Department, University street, no. 3, Oradea, Bihor, 410087, Romania. E-mail: gabiroseanu@gmail.com

** Ph.D., University of Oradea, Faculty of Socio-Humanistic Sciences, Psychology Department, University street, no. 3, Oradea, Bihor, 410087, Romania. E-mail: mmarianster@gmail.com

self-blame. This problematic behavioral pattern severely affects the lives of nearly half of college students and 20% of the general population (Jakson, Fritch, Nagasaka, & Pope, 2003).

Haycock, McCarthy, and Skay (1998) specify that the delay inherent in procrastination is also accompanied by an internal subjective discomfort. This distress differentiates procrastination from simply deciding to do an activity later.

Procrastination represents a choice and decision to delay. This decision frequently continues over time despite numerous opportunities available to change the pattern (Knaus, 2000).

According to Lay (as cited in Jakson et al., 2003) the task avoidance behavior of procrastinators is a mechanism for coping with anxiety, negative affect and threat of initiating and performing tasks. Thus the task is avoided until there isn't sufficient time to perform optimally. Baumaister, Hetherington, and Tice (1994) also sustain that procrastination may result, in part, from attempts to avoid the anxiety or other negative affective states that accompany working on projects. Specter and Ferrari (2000) explain that individuals with frequent procrastination tendencies attend more to their past accomplishments (being overly preoccupied with them) and less to their future goals.

Jakson et al. (2003) describes procrastinators as individuals who work more slowly, make more performance errors and are unable to focus their attention when cognitive loads are high. Also, these individuals have difficulties with self-regulation in pursuing a goal and they are overly concerned with short-term affective improvement at the expense of long-term self-management.

Behaviorists believe that procrastination is a learned habit developing from human preference for pleasurable activities and short-term rewards. Psychodynamic theorists consider procrastination as a rebellion against overly demanding or overindulgent parents or as a means of avoiding unconscious death anxiety. Cognitive theorists linked procrastination to several variables such as irrational beliefs, attribution style, beliefs about time, self-esteem, optimism and self-handicapping strategies. Most of these specialists agree that individuals who base their esteem on high performance, procrastination allows them to avoid complete testing of their abilities, thus maintaining a belief that their abilities are higher than their actual performance might be. (Haycock et al., 1998).

According to Knaus (2000) procrastination falls into two broad and often overlapping categories: *social* and *personal*. Depending upon the individual, both forms of procrastination involve situational and persistent features. Social procrastination includes *habitual lateness* that inconvenience others who rely upon schedules and count on responsible actions. Personal procrastinators needlessly delay in ways that directly affect their lives.

Method

Instrument description

Lay's (1986) student version procrastination scale identifies the person's tendency to postpone finishing or starting different tasks. It is composed of 20 items that form one general factor. The respondent indicates on five point Likert scale (from 1 = "extremely uncharacteristic" to 5 = "extremely characteristic") the extent to which each item is characteristic for them. Half the items are reverse scored. Based on the score of each item a general score is calculated which indicates the magnitude of the procrastination behavior. The author of the scale reports a Cronbach's alpha of .82 and retest reliability of .80.

Participants

The study sample included 125 first year students (psychology and psycho-pedagogy major) from Oradea and Beiuş. Most of the participants were female (90%) aged between 18 and 49 years ($m = 21.13$; $\sigma = 4.27$). The participation to the study was voluntary the sample being balanced from a socio-demographic point of view (57.6% of participants were from urban areas and 42.4% from rural areas).

Results and discussion

The objective of our study was the validation of Lay's (1986) student version procrastination scale for the Romanian population. The first step was running an exploratory factor analysis for all items. In accordance with the specifications of the author we expected to obtain a single factor solution. Our results indicated that for items: 3, 5 and 11 the anti-image coefficients were lower than the critical value (ranging from .345 to .362) thus these items were

removed. Also, for items 1 and 13 the extraction coefficients were lower than the critical value (.446 and .454 respectively) therefore they were also removed. We consider that the removal of these items does not affect the general concept of procrastination in the case of students since they refer to aspects of postponing that are less frequent in the modern age (such as: “When I am finished with a library book, I return it right away regardless of the date it is due” [item 3]. “A letter may sit for days after I write it before mailing it” [item 5]), or refer to behaviors that are not specific enough for procrastination (such as: “I prefer to leave early for an appointment” [item 13]).

Next we ran another exploratory factor analysis for the remaining 15 items. The KMO (.763) and Bartlett's Test ($\chi^2=815.93$; $p<.01$) coefficients were within the accepted range thus we could proceed with data analysis. All items showed adequate extraction coefficients (Table 1).

Table 1. Communalities

Items	Initial	Extraction
sa2	1.000	.707
sa4	1.000	.526
sa6	1.000	.803
sa7	1.000	.670
sa8	1.000	.541
sa9	1.000	.717
sa10	1.000	.665
sa12	1.000	.711
sa14	1.000	.708
sa15	1.000	.684
sa16	1.000	.899
sa17	1.000	.907
sa18	1.000	.792
sa19	1.000	.643
sa20	1.000	.624

Note: Extraction Method: Principal Component Analysis

The obtained results indicate a five factor solution that explains 70.642% of variance (Table 2). However the scree plot indicates a two factor solution (fig. 1).

Table 2. Total Variance Explained

Comp.	Initial Eigenvalues			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	5.258	35.051	35.051	3.649	24.324	24.324
2	1.737	11.579	46.630	1.918	12.789	37.112
3	1.404	9.359	55.989	1.869	12.463	49.576
4	1.133	7.553	63.542	1.758	11.721	61.297
5	1.065	7.100	70.642	1.402	9.345	70.642

Note: Extraction Method: Principal Component Analysis.

*Table only partially reproduced

In order to identify the exact number factors we used the parallel factor analysis procedure. According to Lance, Butts, and Michels (2006) it is considered the most reliable method for determining the exact number of factors. For this purpose we used an SPSS syntax created by O'Connor (2000).

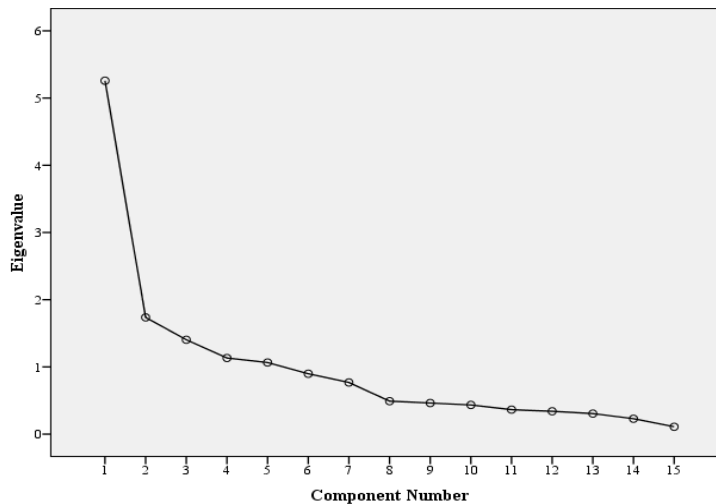


Fig. 1. Scree plot for the 15 item instrument

The parallel factor analysis indicated a three factor solution (Table 3). In accordance with this result we ran the exploratory factor analysis again forcing three factors. This factor solution explains 55.98% of variance (Table

4). However, it is observed from the factor loadings table that the third factor only has two items (Table 4).

Table 3. Parallel factor analysis

Root	Eigenvalues
1	4.82
2	1.26
3	1.03
4	.60

Due to the fact that these items investigate themes that are not central for the concept of student procrastination we decided to eliminate them from the instrument (I always seem to end up shopping for birthday or Christmas gifts at the last minute [item 16]. I usually buy even an essential item at the last minute [item 17]).

Table 4. Rotated Component Matrix

	Component		
	1	2	3
sa9	.789		
sa2	.774		
sa12	.772		
sa14	-.723	.299	
sa15	-.663	.406	
sa7	.600	-.397	
sa19	.558		
sa10	.541	-.421	
sa18		.721	
sa20		.683	
sa6		.660	
sa4		.472	
sa8	-.295	.378	
sa16			.907
sa17			.888

Note: Extraction Method: Principal Component Analysis; Rotation Method; Varimax with Kaiser Normalization

Our final exploratory factor analysis included 13 items and two forced factors to be extracted. Our results indicated a solution that explains 49.88 of total variance (Table 5). For factor rotation the Varimax method was used.

Table 5. Total Variance Explained – two factor solution*

Comp.	Initial Eigenvalues			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.833	37.180	37.180	4.020	30.922	30.922
2	1.651	12.702	49.882	2.465	18.960	49.882

Note: Extraction Method: Principal Component Analysis.

*Table only partially reproduced

Based on the factor loadings (Table 6) we identified the factors as following: (1) *assignment procrastination*, explaining 30.92% of variance (eigenvalue 4.83), being composed of items such as: “I do not do assignments until just before they are to be handed in” (total of 8 items); (2) *general promptness*, explaining 18.96% of variance (eigenvalue 1.65), being composed of items such as: „I usually take care of all the tasks I have to do before I settle down and relax for the evening” (total of 5 items).

Table 6. Rotated Component Matrix

	Component	
	1	2
sa9	.823	
sa2	.805	
sa12	.793	
sa14	-.738	.306
sa15	-.685	.415
sa7	.560	-.411
sa10	.544	-.430
sa19	.524	
sa18		.731
sa20		.689
sa6		.650
sa4		.493
sa8	-.329	.378

Note: Extraction Method: Principal Component Analysis;
Rotation Method: Varimax with Kaiser Normalization

The alpha Cronbach coefficient for the first factor is .864 and for the second factor is .564. For this last factor we consider that since it contains only five items the obtained results indicate adequate internal consistency.

As our final step of our validation study, we ran a confirmatory factor analysis. Our results indicate that the proposed two factor model for the 13 remaining items of the instrument is adequate (Table 7 fit indices; Table 8 regression weights). The structural model is presented in figure 2.

Table 7. Main model fit indices for the proposed model

(CMIN/DF)	GFI	RMR	Standardized RMR	RMSEA
2.672	.831	.085	.0918	.116

Table 8. Regression Weights

			Estimate	S.E.	C.R.	P
sa9	<---	Factor 1	1.000			
sa19	<---	Factor 1	.715	.172	4.167	***
sa10	<---	Factor 1	.961	.156	6.178	***
sa7	<---	Factor 1	.854	.139	6.167	***
sa15	<---	Factor 1	-1.214	.157	-7.741	***
sa14	<---	Factor 1	-1.142	.145	-7.899	***
sa12	<---	Factor 1	1.410	.179	7.856	***
sa2	<---	Factor 1	1.146	.160	7.183	***
sa18	<---	Factor 2	1.000			
sa8	<---	Factor 2	.966	.250	3.862	***
sa6	<---	Factor 2	.786	.265	2.964	.003
sa4	<---	Factor 2	1.181	.320	3.687	***
sa20	<---	Factor 2	1.195	.261	4.572	***

Note: ***p<.01

All items show high loading coefficients on their proposed factors. Also, the two factors show a high negative correlation ($r=-.55$; $p<.01$).

In summary, our validation study for the Romanian population yielded an instrument that is composed of 13 items that group in two negatively correlated factors. The first factor was named *assignment procrastination* and is composed of items: 2, 7, 9, 10, 12, 14 (reverse scored), 15 (reverse scored), and 19. The second factor was named *general promptness*, being composed of items: 4, 6, 8, 18 and 20. The score for each factor (subscale) is calculated by summing the score of the items in its composition.

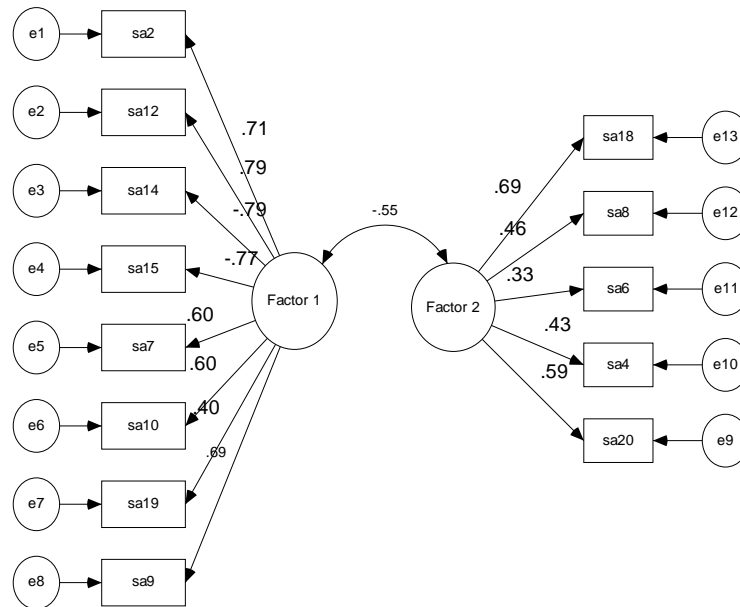


Fig. 2. Proposed structural model for the two factor solution of the Romanian version of the Procrastination Scale

Conclusions

The aim of our study was to validate Lay's (1986) student version procrastination inventory for the Romanian population. Our results indicated that from the 20 original items only 13 are adequate to be used in the case of the Romanian population. Also, these 13 items group into two factors, as opposed to the original instrument for which the author specified only one general factor. Since the two obtained factors are qualitatively different and also correlate negatively we consider that a general procrastination factor cannot be calculated for the Romanian version of the instrument.

The exploratory and confirmatory factor analyses and the internal consistency coefficient as well indicate that the Romanian version of the Lay's Procrastination inventory for students is adequate to be used in educational and clinical settings. We consider that this instrument would prove invaluable

mostly to specialists working with students for understanding poor academic performance (and course withdrawal). Finally, we mention the fact that a follow-up study is necessary on a large number of students in order to establish reliable norms for the two factors.

References

- Baumaister, R. F., Heatheron, T. F., & Tice, D. M. (1994). *Losing control: How and why people fail at self-regulation*. New York: Academic Press.
- Ferrari, J. R. (1998). Procrastination. In H. Friedman (Ed.), *Encyclopedia of Mental Health, Volume 3*. San Diego, CA: Academic.
- Haycock, L. A., McCarthy, P., & Skay, C. L. (1998). Procrastination in College Students: The Role of Self-Efficacy and Anxiety. *Journal of Counseling & Development, 76*, 317-324.
- Jakson, T., Fritch, A., Nagasaka, T., & Pope, L. (2003). Procrastination and Perceptions of Past Present, and Future. *Individual Differences Research, 1*(1), 17-28.
- Knaus, W. (2000). Procrastination, Blame, and change. *Journal of Social Behavior and Personality, 15*(5), 153-166.
- Lay, C. (1986). At last, my research article on procrastination. *Journal of Research in Personality, 20*, 474-495.
- Lance, C. E., Butts, M. M., & Michels, L. C. (2006). The sources of four commonly reported cutoff criteria: What did they really say? *Organizational Research Methods, 9*(2), 202-220.
- O'Connor, B. P. (2000). SPSS and SAS programs for determining the number of components using parallel analysis and Velicer's MAP test. *Behavior Research Methods, Instrumentation, and Computers, 32*, 396-402.
- Specter, M. H., & Ferrari, J. R. (2000). Time orientations of procrastinators: Focusing on the past, present or future? *Journal of Social Behavior and Personality, 15*, 197-202.

Received February 28, 2012

Revision received April 30, 2012

Accepted May 11, 2012