

Original Article

Irrational Procrastination Scale: Translation and Validation in Greek

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Abstract

Background: Procrastination is the act of intentionally postponing a planned action, even when aware that the delay may lead to negative outcomes. It involves putting off an essential or personally significant task, whether visible or hidden, despite having intended to start or finish it.

Aim: To translate and validate the Irrational Procrastination Scale (IPS) in the Greek language.

Methods: We employed the forward-backward method to translate and adapt the IPS in Greek language. In particular, two scholars translated the English version of the IPS in Greek, and then two other scholars back translated the Greek version in English. Another scholar overviewed the translation procedure solving any discrepancies. We examined the reliability of the IPS by calculating Cronbach's alpha. Also, we performed a test-retest study to examine the reliability of the IPS by calculating the intraclass

correlation coefficient. We examined the construct validity of the IPS by performing confirmatory factor analysis. We examined the concurrent validity of the IPS using the TikTok Addiction Scale (TTAS). **Results:** We found that the IPS had very good reliability since intraclass correlation coefficient for the test-retest was 0.992 (95% confidence interval = 0.985 to 0.996, $p < 0.001$). Moreover, Cronbach's coefficient alpha for the IPS was 0.89. We found that the Greek version of the IPS had a one-factor structure as the original version. All indices indicated an acceptable one-factor model. In particular, χ^2/df was 2.595, RMSEA was 0.077, GFI was 0.943, AGFI was 0.904, TLI was 0.944, IFI was 0.958, NFI was 0.933, and CFI was 0.958. Concurrent validity of the Greek version of the IPS was very good since we found statistically significant correlation between the IPS and the TTAS ($r = 0.441$, $p < 0.001$). **Conclusion:** The Greek version of the Irrational Procrastination Scale is a reliable and valid tool to measure levels of procrastination.

Keywords: Irrational Procrastination Scale; validation; Greek; validity; reliability; TikTok Addiction Scale

Introduction

Procrastination is the act of intentionally postponing a planned action, even when aware that the delay may lead to negative outcomes. It involves putting off an essential or personally significant task, whether visible or hidden, despite having intended to start or finish it. The topic of procrastination is gaining attention in various fields, such as finance, where individuals delay addressing financial issues, and health, where people postpone medical appointments (Klingsieck, 2013; Steel, 2007).

Procrastination is central to numerous societal challenges, from environmental issues to health concerns, as we defer addressing them, allowing problems to escalate over time (Critchfield & Kollins, 2001; Steel, 2010). For instance, over 80% of Americans have delayed saving for retirement to the point where it is no longer feasible to recover from their procrastination (Clark, 2006). This is particularly concerning given the decreasing reliability of the US government's social safety net, with social security benefits

expected to be significantly reduced by 2040. Consequently, tackling procrastination is becoming a focus in behavioral economics and is beginning to shape public policy (Lynch & Zauberman, 2006).

The prevalence of procrastination is influenced by both personal and situational factors. On one side, it is linked to personality traits like conscientiousness and impulsiveness (Steel, 2007). It is more common in situations involving mastery-goal orientation and less so in self-directed activities (Howell & Watson, 2007; Senécal et al., 2003). On the other side, certain task characteristics and contextual elements, such as high task complexity and lack of clear deadlines, are more likely to lead to procrastination (Ackerman & Gross, 2005; Schraw et al., 2007).

Additionally, procrastination often results in negative impacts on both objective well-being, such as health or academic performance, and subjective well-being (Deniz, 2006; Tice & Baumeister, 1997). Research shows that about 20% of adults

struggle significantly with starting or finishing tasks and commitments, while at least 50% of students view procrastination as a frequent and serious issue in their daily lives (Day et al., 2000; Harriott & Ferrari, 1996). However, despite being distressing, these figures do not necessarily indicate a clinical condition, suggesting that only a small fraction requires psychological intervention (Rozenal & Carlbring, 2014).

In this context, we translated and validated the Irrational Procrastination Scale (IPS) (Steel, 2010) in the Greek language.

Methods

Study design: Study population included 267 participants in Greece. We performed our study during January 2025. We employed the forward-backward method to translate and adapt the IPS in Greek language (Galanis, 2019). In particular, two scholars translated the English version of the IPS in Greek, and then two other scholars back translated the Greek version in English. Another scholar overviewed the translation procedure solving any discrepancies.

We examined the reliability of the IPS by calculating Cronbach's alpha. Cronbach's alpha higher than 0.6 indicates acceptable internal reliability. Also, we performed a test-retest study to examine the reliability of the IPS by calculating the intraclass correlation coefficient.

We examined the construct validity of the IPS by performing confirmatory factor analysis (Galanis, 2013). We examined the concurrent validity of the IPS using the TikTok Addiction Scale (TTAS) (Bilali et al., 2025; Galanis et al., 2024, 2025; Katsiroumpa et al., 2025). We expected a positive correlation between the IPS and the TTAS.

Ethical considerations: We applied the guidelines of the Declaration of Helsinki to perform this study (World Medical Association, 2013). Additionally, the study protocol was approved by the Ethics Committee of Faculty of Nursing, National and Kapodistrian University of Athens (approval number; 05, October 10; 2024).

Statistical analysis: We performed confirmatory factor analysis (CFA) to examine the construct validity of the IPS. In particular, we calculated chi-square/degree of freedom (χ^2/df); root mean square error of approximation (RMSEA); goodness of fit index (GFI); adjusted goodness of fit index (AGFI); Tucker-Lewis index (TLI); incremental fit index (IFI); normed fit index (NFI); comparative fit index (CFI) (Baumgartner & Homburg, 1996; Hu & Bentler, 1998). Acceptable value for χ^2/df is <5 , for RMSEA is <0.10 , and for all other measures in the CFA >0.90 . We used the AMOS version 21 (Amos Development Corporation, 2018) to conduct the CFA. We calculated Pearson's correlation coefficient between the IPS and the TTAS to examine the concurrent validity of the UWES. Also, we calculated intraclass correlation coefficients between the two IPS measurements in test-retest study. P-values less than 0.05 were considered as statistically significant. We used the IBM SPSS 28.0 (IBM Corp. Released 2021. IBM SPSS Statistics for Windows, Version 28.0. Armonk, NY: IBM Corp) for the analysis.

Results

Study population included 267 participants from the general population. Among them, 78.3% ($n=209$) were females and 21.7% ($n=58$) were males. Mean age of our sample was 24.9 years (standard deviation; 8.2).

We found that the Irrational Procrastination Scale had very good reliability since intraclass correlation coefficient for the test-retest was 0.992 (95% confidence interval = 0.985 to 0.996, $p < 0.001$). Moreover, Cronbach's coefficient alpha for the IPS was 0.89.

We performed confirmatory factor analysis to examine the structure of the IPS and we found that the Greek version of the IPS had a one-factor structure as the original version (Figure 1). Table 1 presents model fit indices for the

confirmatory factor analysis. All indices indicated an acceptable one-factor model. In particular, χ^2/df was 2.595, RMSEA was 0.077, GFI was 0.943, AGFI was 0.904, TLI was 0.944, IFI was 0.958, NFI was 0.933, and CFI was 0.958. Moreover, standardized regression weights for the nine items ranged from 0.38 to 0.84. Concurrent validity of the Greek version of the IPS was very good since we found statistically significant correlation between the IPS and the TTAS ($r = 0.441$, $p < 0.001$).

Table 1. Confirmatory factor analysis for the Greek version of the Irrational Procrastination Scale.

Model	χ^2	df	χ^2/df	RMSEA	GFI	AGFI	TLI	IFI	NFI	CFI
Nine items	70.053	27	2.595	0.077	0.943	0.904	0.944	0.958	0.933	0.958

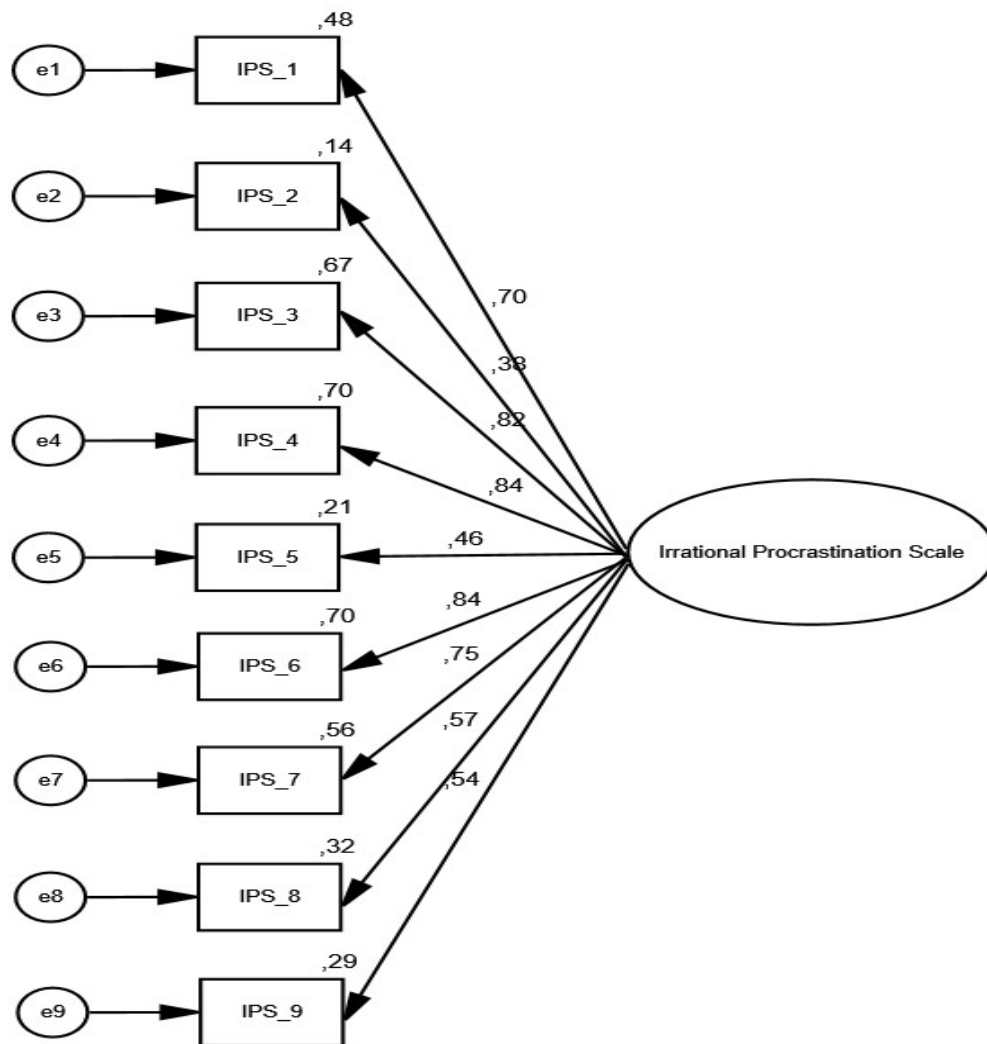


Figure 1. Confirmatory factor analysis for the Greek version of the Irrational Procrastination Scale.

Discussion

Our study shows that the Greek version of the Irrational Procrastination Scale exhibits very good psychometric characteristics, confirming its validity and reliability as a tool for assessing levels of procrastination.

Initially, factor analysis indicates that the IPS internal structure is distinctly one-dimensional, aligning with the perspective of Steel and Svartdal et al. that the IPS likely

assesses general procrastination as a singular trait (Steel, 2010; Svartdal, 2017; Svartdal et al., 2016). Although Rozental et al. (Rozental et al., 2014) identified a two-dimensional structure, they suggested that the second factor might be an artifact of the instrument, possibly due to reverse items, and both proposed that a one-dimensional structure is more credible. Notably, the sample characteristics in these studies differ significantly from those analyzed with the

English and Spanish versions. For instance, Rozental et al. (Rozental et al., 2014) employed a clinical sample. These variations could account for the differences in dimensional structure findings.

Furthermore, the internal consistency and temporal stability of the IPS scores are satisfactory. Our findings regarding internal consistency are more in line with those of Steel (i.e., 0.91) (Steel, 2010) and Svartdal et al. (i.e., range over countries: 0.85 to 0.93) (Svartdal et al., 2016) than with the lower scores found in the Indonesian and Swedish versions (i.e., 0.79 and 0.76, respectively). The intraclass correlation coefficient observed in our study is nearly identical to the 0.83 reported by Rozental et al. (Rozental et al., 2014).

Our study encountered a few limitations. We utilized a convenience sample of the general population to validate the IPS in Greek, which limits the generalizability of our findings. It is important to validate this tool with other samples in Greece. Additionally, we used self-reported questionnaires, including the TTAS, to examine the concurrent validity of the IPS. Researchers could also explore various other types of validity for the IPS.

In summary, the Greek version of the Irrational Procrastination Scale demonstrated very good psychometric properties, making it a valid and reliable instrument for assessing levels of procrastination in the general population.

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