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Quick Response Code:

Website: www.jehp.net
DOI: 10.4103/jehp.jehp_297_21

Validity and reliability: The psychometric properties of the Persian version of Short Form of the Impulsiveness Questionnaire UPPS-P in Iran

Forouzan Behrouzian¹, Khalil Tazik², Esmail Mousavi Asl¹

Abstract:

BACKGROUND: Impulsiveness is a multidimensional and multifaceted construct that plays an important role in understanding various psychopathology and problematic behavior. It is necessary to study the psychometric properties of instruments in the new culture before its scientific application, and it also contributes to external validity. The current study was conducted to determine the psychometric properties of the Persian version of Short Form of the Impulsiveness Questionnaire UPPS-P (SUPPS-P) in a sample of male soldiers serving in the military service.

MATERIALS AND METHODS: The present research design is cross-sectional in 2019–2020. The Iranian version of the SUPPS-P was prepared across forwarding translation, reconciliation, and back-translation. The research sample included 254 soldiers who were selected via convenience sampling method and completed a set of scales, including the SUPPS-P scales, short-form self-compassion scale, McLean Screening Instrument for Borderline Personality Disorder (MSI-BPD), Cognitive Flexibility Inventory (CFI), Perth Alexithymia Questionnaire (PAQ), and the Deliberate Self-harm Inventory (DSHI). The construct validity of SUPPS-P scale was measured using confirmatory factor analysis and convergent and divergent validity. For reliability, Cronbach's alpha and test–retest reliability (with 2 weeks interval) were used. Data were analyzed using LISREL software (version 8.8) and SPSS version 22.

RESULTS: The results showed that the SUPPS-P scale is a reliable and valid scale with acceptable internal consistency and acceptable test–retest reliability among soldiers. In terms of convergent validity, SUPPS-P showed a significant positive correlation with measures of MSI-BPD, PERS, and DSHI. SUPPS-P showed a negative correlation with self-compassion and cognitive flexibility, thus demonstrated a good divergent validity. The results of this study also provide support for the five-factor model of the SUPPS-P scale.

CONCLUSION: The SUPPS-P instrument showed acceptable validity and reliability and could be useful in assessing impulsivity in Iranian society. The SUPPS-P scale shows notable promise as a measure for use in impulsivity research and clinical settings.

Keywords:

Factor analysis, impulsiveness, psychometric, questionnaire

Introduction

Impulsive behavior involves acting without lag, thinking, reflection, pondering, volitional direction, or control in response

to a stimulus. Although impulsiveness is considered by some as a unitary construct, it includes different dimensions and aspects among different nonclinical populations^[1-3] and people with psychopathologies.^[4] Impulsivity is used as a diagnostic criterion

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How to cite this article: Behrouzian F, Tazik K, Asl EM. Validity and reliability: The psychometric properties of the Persian version of Short Form of the Impulsiveness Questionnaire UPPS-P in Iran. J Edu Health Promot 2022;11:90.

¹Department of Psychiatry, Golestan Hospital, School of Medicine, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran, ²Department of General Courses, School of Medicine, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran

Address for correspondence:

Dr. Esmail Mousavi Asl, Department of Psychiatry, Golestan Hospital, School of Medicine, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran.
E-mail: seyedesmaeilmousaviasl@gmail.com

Received: 04-03-2021

Accepted: 06-07-2021

Published: 23-03-2022

for many disorders in the DSM-5. It is also involved in risk models for various disorders such as alcoholism, eating disorders, and pathological gambling.^[5] The UPPS-P Impulsive Behavior Self-Reporting Scale is a widely used tool for measuring impulsive behavior^[4] and distinguishes between different dimensions of impulsivity.^[1,2]

This scale measures the following five different dimensions of impulsivity: (1) negative urgency: The tendency to experience potent impulses under conditions of negative emotion; (2) premeditation (lack of): The tendency to think and reflect on the results of an action before doing it refers to (tendency to lack reflection on the consequences of action); (3) perseverance (lack of): Difficulty in concentrating on work that is boring, difficult, or monotonous; (4) sensations seeking: Tendency to seek new and exciting experiences; and (5) positive urgency: Positive urgency is the tendency to experience strong shocks when the mood is unusually positive.^[4,6] The dimensions that the UPPS-P scale reflects are the result of exploratory factor analysis collected from items and questions of various tools that are reliable and valid and measure traits related to impulsivity.^[1,2] Each of these dimensions is differently related to behavior in different psychopathological conditions such as ADHD, alcohol abuse, and eating disorders. These dimensions are also related to traits such as differences and changes in aggression, self-discipline, academic performance, symptoms of anxiety and depression, and risk-taking found in nonclinical samples.^[2-4,6]

The UPPS-P scale is a relatively long 59-item instrument that is unsuitable for short measurement time, as well as for populations such as adolescents and individuals with low socioeconomic status/education who are easily distracted and bored. To overcome these limitations, the items in the new version were reduced by Cyders *et al.*^[7] and is called SUPPS-P.

Compared to the full UPPS-P, SUPPS-P Cyders *et al.*^[7] complete more quickly, retain their previous factor structure, and have good internal consistency and internal correlation subscales. The new version has lost only a small amount of common variance. Such a small scale makes it possible to identify impulsivity features separately for those interested in research and clinical purposes around the world.^[8] Billieux *et al.*^[9] performed psychometric properties of this scale on highly educated young adults from developed countries. Different aspects of impulsivity are influenced by age and sociological characteristics, which may be a reflection of differences in culture, genetics, biology, and environmental contexts.^[10-12] Moreover, it is important for us that this scale can be used in populations with different cultures and demographic characteristics.^[10,11,13-15]

These tools are short and can be easily used in clinical work. It also saves time and allows better use in other care and research environments. Another problem is the standardization of tools made in countries with different languages and sociocultural contexts. Therefore, it is necessary to study the psychometric properties of a tool in the new culture before its scientific application.^[16] Due to the importance of the impulsivity construct and the need to provide a reliable tool to measure it, the present research was conducted to investigate the psychometric properties of the Persian version of the SUPPS-P scale.

Materials and Methods

Study design and setting

The present study is cross-sectional and belongs to correlational designs in terms of data collection and analysis. The statistical population of the study included all army soldiers in Tehran in 2019–2020.

Study participants and sampling

In the present study, the convenience sampling method was used to collect data, given that the minimum sample size for confirmatory factor analysis (CFA) is 200,^[17] and that CFA is more exact when the sample size is above 250.^[18] Based on this, 300 soldiers were selected by convenience sampling method, but in the end, 254 questionnaires could be used and the final analysis was performed on 254 people.

Data collection tool and technique

This research was in the form of completing a questionnaire that after obtaining the consent of the people, the questionnaires were given to them. At the same time, the participants were free to refrain from continuing cooperation at any stage of the research. The implementation of this study did not impose any financial costs on the participants.

Ethical consideration

This research has an ethics code number 1397.043 which was approved by the Aja University of Medical Sciences.

Measures

SUPPS-P scale

It is a 20-item scale that measures five dimensions of impulsive behavior including lack of perseverance, positive urgency, negative urgency, lack of premeditation, and sensation seeking. This scale is scored on a four-point scale from 1 (strongly disagree) to 4 (strongly agree), and higher scores indicate greater impulsivity. SUPPS-P scale has good psychometric properties.^[7,8]

The SUPPS-P scale was prepared as the basis for cross-cultural adaptation guides. The SUPPS-P scale was independently translated into Persian by several

professors of clinical psychology. In addition, the translated version was reviewed by another bilingual, then two English language experts were asked to translate it into the original language. The translated text was compared with the original text and its flaws and drawbacks were examined. In addition, three bilingual clinical psychologists compared the final Persian version of SUPPS-P with the original version. In the next step, the scale was performed on a sample of 22 people and the problems were corrected. After completing the final scale steps, it was prepared to administration on the sample.

Self-Compassion Scale Short-Form

The short form of the Self-Compassion Scale consists of 12 items whose responses range from 1 (almost never) to 5 (almost always). The short form has a high correlation with the long form of self-compassion ($r = 0.97$) and the reliability of the retest has been reported to be 0.92.^[19] The Persian version of this scale has acceptable psychometric properties.^[20]

Cognitive flexibility inventory (CFI)

The questionnaire, developed by Dennis and Vanderwall,^[21] consists of twenty items to measure the kind of cognitive flexibility needed in a person's success to challenge and replace dysfunctional thoughts with more efficient thoughts. The scoring method of this questionnaire is based on a 7-point Likert scale. This questionnaire is used in clinical and nonclinical work.^[21] Shara *et al.*^[22] reported that this questionnaire has good validity and reliability in Iran.^[22]

Perth Alexithymia Questionnaire (PAQ)

This questionnaire has 24 items that are designed to assess alexithymia in adolescents and adults. People respond to each item on a seven-point scale from 1 (strongly disagree) to 7 (strongly agree). People with higher scores have more alexithymia.^[23] This questionnaire has good validity and reliability in Iranian society.^[24]

The McLean Screening Instrument for Borderline Personality Disorder

It is a ten-item questionnaire that is scored true–false. This questionnaire is based on the criteria of DSM-IV and DSM-5 for borderline personality disorder.^[25] The Persian version of this scale was standardized by Mousavi Asl *et al.*, Which has good validity and reliability.^[26]

The Deliberate Self-harm Inventory

It is a 17-item questionnaire that assesses the history of self-harming behaviors throughout life. The subject is asked to answer the questions yes or no. The reliability of the test–retest of the deliberate self-injury questionnaire was 0.92 and its Cronbach's alpha coefficient was reported to be 0.82^[27,28] and this questionnaire has been widely used in research.^[27]

Statistical analysis

Data were analyzed using SPSS version 22 (IBM SPSS Statistics for Windows, Version 22.0. Armonk, NY: IBM Corp, Chicago, USA, 2013). Divergent validity, convergent validity, test–retest reliability, and internal consistency of the SUPPS-P scale were calculated. Cronbach's alpha level between 70 and 95 indicates optimal internal consistency.^[29] All significant values were reported at the level of two domains and in all tests, the level of $P \leq 0.05$ was considered statistically significant.

The structural equation model was used to assess the structural validity of the SUPPS-P scale. The five-factor structure of the SUPPS-P scale was tested using LISREL software (8.8) as proposed in the original version. Indicators and model fit parameters were estimated using the maximum likelihood model. The fit of the model was evaluated based on a number of indicators. These indicators are: The standardized root mean square residual (SRMR), Chi-square statistic, Non-Normed Fit Index (NNFI), The comparative fit index (CFI), Incremental Fit Index (IFI), and The root mean square error of approximation (RMSEA). An acceptable model fit is assumed to be $NNFI \geq 0.90$, $CFI \geq 0.90$, $SRMR \leq 0.10$, and $RMSEA \leq 0.08$.^[18] $IFI \geq 0.90$ indicates an acceptable model fit.^[17]

Results

Description of the sample

Considering that 46 people were excluded from the study, the results were analyzed on 254 soldiers with an age range of 18–31 years with a mean and standard deviation of 25.71 ± 3.86 . Educational status of 254 soldiers who participated in this study: 83 (32.67) had diplomas, 20 (7.87) had a degree lower than diploma, 107 (42.12) BSc degree, and 44 (17/32) MSc degree.

Correlations among the SUPPS-P subscales are shown in Table 1. The SUPPS-P subscales are positively correlated ($n = 254$).

The mean and standard deviation and correlation of SUPPS-P and the subscale are shown in Table 1.

Reliability

The reliability of SUPPS-P scale and their subscales was evaluated using two methods of internal consistency by calculating Cronbach's alpha coefficient and test–retest reliability by calculating intraclass correlation coefficient (ICC). Internal consistencies with Cronbach's alpha method for the total SUPPS-P score and the subscales of negative urgency, lack of perseverance, Lack of premeditation, sensation seeking, and positive urgency, respectively 0.78, 0.71, 0.66, 0.72, 0.65, and 0.68 were

obtained. To evaluate the reliability of the test-retest, 31 soldiers in the study completed the SUPPS-P scale at 2-week intervals. ICC scores for the total SUPPS-P score and the subscales of negative urgency, lack of perseverance, lack of premeditation, sensation seeking, and positive urgency were 0.88, 0.92, 0.90, 0.89, 0.93, and 0.83, respectively, were obtained, which indicate that the reliability of the test-retest is good.

Convergent and divergent validity of SUPPS-P scale

The convergent validity of the SUPPS-P was investigated by examining the relationship between SUPPS-P total scores and subscales with scores on self-report measures of PERS, Deliberate Self-harm Inventory (DSHI), and McLean Screening Instrument for Borderline Personality Disorder (MSI-BPD). The results demonstrated the expected relationship between the SUPPS-P, PERS, DSHI, and MSI-BPD. Positive correlations were found between the SUPPS-P and its subscales with PERS, DSHI, and MSI-BPD ($P < 0.01$) [Table 2].

To evaluate the divergent validity of the SUPPS-P, we examined the association between the SUPPS-P and two theoretically less related constructs, including self-compassion and CFI. As expected, we found negative correlations between the SUPPS-P and these two scales ($P < 0.01$) [Table 2].

Confirmatory factor analysis

To evaluate the construct validity of the SUPPS-P and determine the fit of the factor and subscales structure obtained by Cyders *et al.*,^[14,15] CFA was performed. Based on the results of SUPPS-P, the five-factor model was tested [Table 3]. The results of the fit indices for this

model are tabulated in Figure 1. The five factor models fitted the data well. Based on the results of Table 3, it can be said that the five-factor model of the scale of SUPPS-P has a good fit.

Discussion

Impulsivity is a multidimensional and multifaceted construct that plays an important role in understanding various psychopathology and problematic behavior. Impulsive construct is very significant in personality and plays an important role in many forms of dysfunctional behavior, for instance, attention deficit hyperactivity disorder, eating disorders, and substance use disorders.^[1] The SUPPS-P scale is a useful tool for understanding the various dimensions of an impulsive construct. The aim of this study was to investigate the psychogenic properties of SUPPS-P scale.

In this study, the validity, reliability, and factor structure of the Persian version of this scale were examined in a military sample. The results showed that the five-factor structure is confirmed in Iranian society. These results are consistent with the study of the factor structure of this scale in other societies.^[7,9,30-34]

Our results on the SUPPS-P factor structure were consistent with previous findings that showed that impulsivity should be considered as a multidimensional construct in theory, measurement, and clinical practice^[7,9,30,31] and also in line with conceptualization contemporary from impulsivity.^[35,36]

The results of our research showed that impulsivity should be considered as a multidimensional structure

Table 1: The mean and standard deviation and correlation of Impulsive Behavior Scale and the subscale

Variable	Mean±SD	1	2	3	4	5	6
SUPPS-P	44.06±7.22	1	0.71**	0.47**	0.64**	0.44**	0.80**
Negative urgency	9.67±2.49		1	0.08	0.29**	0.15*	0.65**
Lack of perseverance	6.99±2.09			1	0.60**	0.16**	0.04
Lack of premeditation	6.90±2.06				1	0.07	0.28**
Sensation seeking	10.95±2.45					1	0.33**
Positive urgency	9.53±2.65						1

*Correlation is significant at 0.05 level, **Correlation is significant at 0.01 level. SUPPS-P=Impulsive Behavior Scale

Table 2: Convergent and divergent validity of the Impulsive Behavior Scale

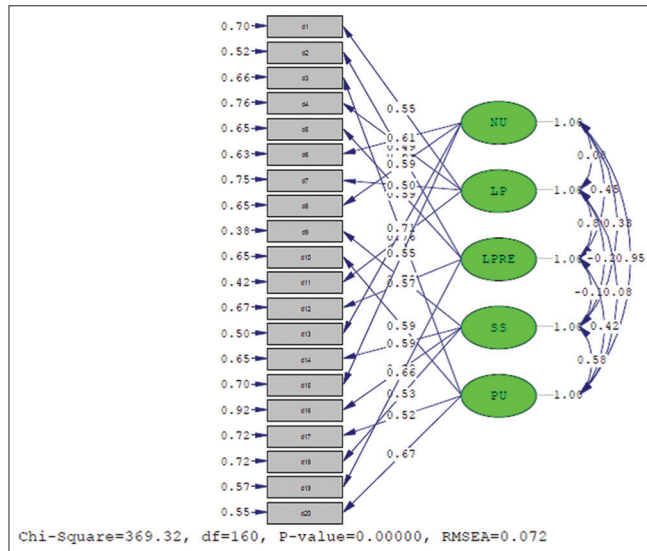
variable	MSI-BPD	PERS	DSHI	CFI	Self-compassion
SUPPS-P	0.51**	0.44**	0.49**	-0.52**	-0.53**
Negative urgency	0.48**	0.34**	0.33**	-0.50**	-0.50**
Lack of perseverance	0.10	0.25**	0.32**	-0.30**	-0.32**
Lack of premeditation	0.32**	0.36**	0.34**	-0.51**	-0.41**
Sensation seeking	0.13*	0.00	0.14*	0.12	0.01
Positive urgency	0.48**	0.40**	0.38**	-0.41**	-0.40**

*Correlation is significant at 0.05 level, **Correlation is significant at 0.01 level. MSI-BPD=McLean Screening Instrument for Borderline Personality Disorder, CFI=Cognitive flexibility inventory, DSHI=The Deliberate Self-harm Inventory, SCS=Self-Compassion Scale, SUPPS-P=Impulsive Behavior Scale, PERS=Perth Alexithymia Questionnaire, PAQ=Perth alexithymia questionnaire

Table 3: Goodness-of-fit indices for five-factor model of the SUPPS-P scale

Fit indices	χ^2	df	P	χ^2/df	RMSEA	IFI	CFI	SRMR	NNFI	NFI	Gfi	AGFI
Quantity	369.32	160	0.000	2.30	0.07	0.91	0.91	0.06	0.92	0.91	0.86	0.80

CFI=Cognitive flexibility inventory, IFI=Incremental fit index, SRMR=Standardized root mean square residual, NNFI=Nonnormed fit index, AGFI=Adjusted goodness-of-fit index, GFI=Goodness-of-fit index, NFI=Normed fit index, RMSEA=Root mean square error of approximation

**Figure 1:** Construct validity of the Persian Version of SUPPS-P

including positive urgency, lack of perseverance and negative urgency, lack of premeditation, and sensation seeking. As Billieux *et al.*^[9] said, the 59-item version of UPPS-P takes 15 min, while the new version only takes 5 min and also has a strong theoretical basis.

Zsila *et al.*^[34] who examined the factor structure of this scale in a large Hungarian sample (15073 people). The results supported the five-factor structure and showed good internal consistency and validity. This scale can help to investigate the relationship between impulsivity and psychopathological manifestations in constructing explanatory models. This scale can help to investigate the relationship between impulsivity and psychopathological manifestations in constructing explanatory models. The SUPPS-P also demonstrated good internal consistency, as proved by previously conducted studies.^[7,9] Our study showed good test and retest reliability. Test-retest reliability over 2 weeks with a sample of 31 soldiers yielded a significant ICC for the SUPPS-P subscales.

The results showed a positive and significant correlation between SUPPS-P scale with borderline personality symptoms,^[37,38] nonsuicidal self-injury,^[39,40] and alexithymia.^[41,42] The results also showed a significant negative correlation between SUPPS-P scale with self-compassion^[43,44] and cognitive flexibility.^[45,46]

People with impulsivity do not have a high tolerance for experiencing distress, they cannot easily assess and

absorb their feelings of distress and helplessness, and they are more likely to engage in impulsive behaviors when experiencing negative emotions such as stress, anxiety, and solve interpersonal problems. Impulsive people also have a low ability to tolerate negative emotions, frustration, and emptiness, and resort to unhealthy methods such as impulsive behaviors and self-injury to address the distressing emotional state. Cognitive flexibility helps individuals have the ability to change cognitive motives to adapt to changing environmental stimuli. It therefore reduces the likelihood of engaging in impulsive behavior. Cognitive flexibility also helps people explore new issues, problems, and situations at different levels and dimensions, and offer alternative options and ideas. People with higher self-compassion, because of being open and open to their sufferings, experience a sense of self-care and kindness, along with an understanding of their inadequacies and failures. They have the ability to be compassionate because they are aware of the negative events of the mind because they are able to endure life's problems and challenges.

Limitation and recommendation

One of the limitations of this study is the use of self-report tools such as response set and social desirability. Differences in the nature of the samples (for example, soldiers or clinical sample) may affect the results. The results of this study may not be representative of the general population due to the sampling and standardization method in a specific population. In our research, we used a short period of time for test-retest reliability. In future research, a longer time period for retest reliability was used. The psychometric properties of The SUPPS-P should be assessed in other communities and related samples. Although the The SUPPS-P scale is costly in time and money, as a screening tool it needs follow-up evaluation to confirm the diagnosis.

Conclusion

Impulsivity is a major risk factor for some psychiatric disorders. This scale can help to examine the relationship between impulsivity and the manifestations of psychopathology in constructing explanatory models. This research complements the intercultural literature of this tool and is a suitable tool for research and clinical work. This scale has good validity and reliability in the army force samples. It is recommended to use of the SUPPS-P in other relevant future studies.

Acknowledgments

We appreciate soldiers at Tehran city, who participated in this study.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

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