



Development and validation of a short Italian UPPS-P Impulsive Behavior Scale



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ABSTRACT

Impulsivity is a multidimensional construct that plays a prominent role in the development, maintenance, and relapse of addictive disorders. The UPPS-P model of impulsivity, which distinguishes between five impulsivity components (positive urgency, negative urgency, lack of perseverance, lack of premeditation, sensation seeking), has been increasingly investigated during the last decade in relation to addictive and risky behaviors. Unfortunately, it currently lacks a validated scale that allows Italian researchers and clinicians to measure impulsivity based on the UPPS-P model. The current study fills this gap by testing the psychometric properties of a short 20-item Italian scale used to assess the five dimensions of the UPPS-P model in 188 volunteer participants from the community. Confirmatory factor analysis supported a model of five distinct, but interrelated, impulsivity components. The results indicated good internal consistency (Cronbach's α ranges from .73 to .84). Construct validity was evidenced by specific relations with measures of addictive behaviors and depressive symptoms. On the whole, this study demonstrated that the Italian short UPPS-P has good psychometric properties.

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1. Introduction

The construct of impulsivity plays a pervasive role in psychiatry and is nowadays established as a hallmark of both substance and behavioral addictions (Groman, James, & Jentsch, 2009). Impulsivity is, however, an umbrella construct that encompasses a combination of multiple and separable dimensions (Evenden, 1999), which are influenced by distinct cognitive, affective, and motivational mechanisms (Dick et al., 2010; Gay, Rochat, Billieux, d'Acromont, & Van der Linden, 2008).

The UPPS-P model (Cyders & Smith, 2007; Whiteside & Lynam, 2001), which allows the distinction between five separable impulsivity facets, has been used in a burgeoning number of studies during the last decade. These five impulsivity facets are as follows: (1) negative urgency (tendency to act rashly in negative emotional contexts); (2) positive urgency (tendency to act rashly in positive emotional contexts); (3) lack of premeditation (tendency to not take into account the

consequences of actions); (4) lack of perseverance (tendency to have difficulty remaining focused on difficult and boring tasks); and (5) sensation seeking (tendency to favor stimulating or exciting activities). These impulsivity facets are assessed with the UPPS-P Impulsive Behavior Scale (Lynam, Smith, Whiteside, & Cyders, 2006). A growing number of psychometric studies conducted in different countries and languages are finding that the UPPS-P model is characterized by a robust and consistent factorial structure (Billieux et al., 2012; Cyders & Smith, 2007; Verdejo-García, Lozano, Moya, Alcázar, & Perez-García, 2010) and that its components present good construct validity (Smith et al., 2007) and test-retest reliability (Billieux et al., 2012). Moreover, the various UPPS-P facets are associated with a wide range of psychiatric conditions, especially addictive and risky behaviors (Billieux et al., 2015; Smith et al., 2007; Zapolski, Cyders, & Smith, 2009).

In recent years, short forms of the UPPS-P (S-UPPS-P) scale have been developed in various languages (French, English, and Spanish) for both clinical and research perspectives (Billieux et al., 2012; Cándido, Orduña, Perales, Verdejo-García, & Billieux, 2012; Cyders, Littlefield, Coffey, & Karyadi, 2014). Indeed, the original version of the scale is relatively long (59 items), and previous studies found that the gain in terms of assessment time with a short 20-item version of the questionnaire is not counterbalanced by a marked reduction in its psychometric properties (Billieux et al., 2012; Cyders et al., 2014).

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Table 1
Descriptive statistics, internal consistency, and Pearson correlations among the subscales of the short Italian UPPS-P, the CIUS, the FTND, and the BDI-2.

Questionnaire	N	Mean	SD	α	1	2	3	4	5	6	7
1. UPPS – negative urgency	188	9.16	2.57	.78	–	–	–	–	–	–	–
2. UPPS – positive urgency	188	9.37	2.13	.78	0.50***	–	–	–	–	–	–
3. UPPS – lack of premeditation	188	7.82	1.93	.73	0.32*	0.24	–	–	–	–	–
4. UPPS – lack of perseverance	188	6.97	2.10	.84	0.22	0.32*	0.34*	–	–	–	–
5. UPPS – sensation seeking	188	8.84	2.55	.82	0.32*	0.53***	0.11	–0.10	–	–	–
6. CIUS	180	10.00	7.95	.89	0.26	0.31*	0.07	0.17	0.11	–	–
7. FTND	53	2.04	2.02	.81	0.30*	0.30*	0.08	0.21	0.16	–0.01	–
8. BDI-2	171	7.66	8.39	.88	0.34*	0.49**	0.17	0.30*	0.17	0.36*	0.35*

Note. CIUS = Compulsive Internet Use Scale; FTND = Fagerström Test for Nicotine Dependence; BDI-2 = Beck Depression Inventory.

* $p < .05$.

** $p < .01$.

*** $p < .001$.

No scale currently exists that allows Italian researchers and clinicians to measure impulsivity based on the UPPS-P model. Accordingly, drawing from recent research that validated short 20-item scales based on the UPPS-P model, in the current study we aimed to develop and validate an Italian S-UPPS-P and to explore its psychometric properties, including factorial structure, internal consistency, and construct validity.

2. Material and methods

2.1. Participants and procedure

The sample comprised 188 participants (67.6% female, $N = 127$). Participants were recruited through e-mail invitations and advertisements posted in Italian Facebook groups and Italian health-related forums. The age of the participants ranged from 17 to 69 years (mean = 35.32; $SD = 12.77$). Participants completed four questionnaires in the following fixed order: the short UPPS-P Impulsive Behavior Scale (S-UPPS-P; Billieux et al., 2012), the Fagerström Test for Nicotine Dependence (FTND; Heatherston, Kozlowski, Frecker, & Fagerström, 1991), the Compulsive Internet Use Scale (CIUS; Meerkerk, Van den Eijnden, Vermulst, & Garretsen, 2009), and the Beck Depression Inventory (BDI-2; Beck, Steer, & Brown, 1996). Questionnaires with missing data were not taken into account in the study. As the answers were not forced (e.g., participants were free to complete each of the questionnaires), the number of data available from the questionnaires that were added to establish construct validity was variable. Mean, standard deviation, and internal consistency (Cronbach's alphas) are reported for all questionnaires used in Table 1. Participants gave informed consent and the questionnaires were completed anonymously. No compensation was given. The study was approved by the Independent Ethic Committee, PTV Foundation, Tor Vergata Polyclinic, Rome, Italy.

2.2. Development of the Italian S-UPPS-P

The S-UPPS-P Impulsivity Scale is a 20-item questionnaire that evaluates five facets of impulsivity (four items per dimension): positive urgency, negative urgency, lack of perseverance, lack of premeditation, and sensation seeking. Each facet is evaluated by four items on a 4-point Likert scale. To develop the Italian S-UPPS-P, we had the 20 items of the original S-UPPS-P (Billieux et al., 2012) translated from French into Italian, and then back-translated into French. All discrepancies identified between the original S-UPPS-P and the back-translation were discussed until a satisfactory solution was found.

2.3. Statistical analyses

To determine the factor structure of the Italian S-UPPS-P, we used a confirmatory factor analysis (CFA), computed with LISREL 8.54

(Jöreskog & Sörbom, 1996), to analyze the covariance matrix. We used CFA instead of exploratory factor analysis because the former allows testing specific a priori hypotheses regarding the factorial structure of the scale, which is particularly suited for translations of scales having received prior validations, as is the case for the S-UPPS-P. Three different models were computed.¹ The first model holds that there is a single, unitary impulsivity construct, the second model identifies five interrelated impulsivity constructs, and the third model identifies three interrelated impulsivity constructs. It has indeed been shown that, on the one hand, both lack of premeditation and lack of perseverance are related to a higher order construct of "conscientiousness" and, on the other hand, positive urgency and negative urgency represent a higher order construct of general urgency (Billieux et al., 2012; Cyders & Smith, 2007; Smith et al., 2007).

Goodness of fit was tested with the χ^2 statistic (a nonsignificant value corresponds to an acceptable fit). However, χ^2 is known to increase with sample size, and Byrne (1994) has noticed that it is unusual to obtain a nonsignificant χ^2 when performing CFAs on self-report questionnaires. We therefore completed χ^2 by examining other indices that depend on conventional cut-offs. The following indices were consequently reported: χ^2 to degrees of freedom (df), the root mean square error of approximation (RMSEA), the comparative fit index (CFI), the adjusted goodness of fit index (AGFI), normed fit index (NFI), and the non-normed fit index (NNFI). A $\chi^2/df < 2$, RMSEA $< .05$, CFI $> .97$, AGFI $> .90$, NFI $> .95$, and NNFI $> .97$ are generally interpreted as an excellent fit. Moreover, the expected cross-validation index (ECVI) was used to compare the different models. The ECVI is a measure that assesses whether a model is likely to cross-validate across samples of the same size from the same population. The smaller the ECVI, the greater is the potential for replication of the model (Diamantopoulos & Siguaw, 2008).

Two-tailed Pearson correlations (with a 5% significance criterion) were used to evaluate relations between the facets of the short French UPPS-P and the other questionnaires included in the study.

3. Results

The three models previously explained were computed with CFA. The one-factor model was found to have a poor fit, $\chi^2(170) =$

¹ Previous studies emphasized the relevance of a hierarchical model to establish the factorial structure of the UPPS-P and S-UPPS-P scales (Billieux et al., 2012; Cyders & Smith, 2007). Accordingly, we also tested a hierarchical model in which (1) lack of premeditation and lack of perseverance are two distinct factors loading on a higher factor called "lack of conscientiousness"; (2) positive urgency and negative urgency are two distinct factors loading on a higher order factor called "urgency"; and (3) sensation seeking is a separate impulsivity dimension. When we computed this model, however, the psy and phi matrix were not positively definite, probably due to the sample size. We thus decided to ignore this model, based on the idea that supra-ordered factors are generally not used in research using the UPPS-P scales and that their clinical relevance is lower than the S-UPPS-P subscales (Billieux et al., 2012; Cyders et al., 2014).

821.018, $p < .001$; $\chi^2/df = 4.83$; RMSEA = .173; CFI = .759; AGFI = .537; NFI = .716; NNFI = .731. The five-factor (intercorrelated) model was found to have an excellent fit, $\chi^2(160) = 195.096$, $p = .027$; $\chi^2/df = 1.22$; RMSEA = .0253; CFI = .987; AGFI = .880; NFI = .932; NNFI = .984. Finally, the three-factor (intercorrelated) model was found to have an adequate fit, $\chi^2(167) = 318.778$, $p < .001$; $\chi^2/df = 1.90$; RMSEA = .0757; CFI = .944; AGFI = .804; NFI = .890; NNFI = .936. Using the ECVI as a comparison index, we can affirm that the best model is the five-factor model (ECVI = 1.539), followed by the three-factor model (ECVI = 2.301) and the one-factor model (ECVI = 6.432). Fig. 1 illustrates the retained model, along with the item loadings and intercorrelations. Means, SDs, and internal consistency coefficients (Cronbach's α), as well as correlations between variables, are reported in Table 1. Cronbach's α ranged from .73 to .84, which indicates good internal consistency and is comparable to that in previous studies on the S-UPPS-P (Billieux et al., 2012; Cyders et al., 2014).

4. Discussion

In the current study, we examined the psychometric properties of the Italian S-UPPS-P in a sample of volunteers from the community. Findings of the study can be summarized as follows: (1) the Italian S-UPPS-P holds solid and theory-driven factor structures, composed of five interrelated dimensions; (2) the internal consistency of the subscales is good (Cronbach's α ranges from .73 to .84); and (3) construct validity is confirmed by specific relationships with indices of

psychopathology (see Table 1). Taken together, these results suggest that the Italian S-UPPS-P has adequate psychometric properties.

The main result of the study is that the Italian S-UPPS-P has a similar structure to that of the previous short version of the UPPS-P initially developed in French (Billieux et al., 2012) and then adapted to English (Cyders et al., 2014) and Spanish (Cándido et al., 2012). Such structure has indeed proven its validity and its usefulness in terms of prediction of valuable clinical constructs. On the one hand, the various impulsivity components are specifically related to psychopathological disorders and problematic behaviors. For example, negative urgency has been shown to be the best predictor of drug abuse (Verdejo-García, Bechara, Recknor, & Pérez-García, 2007), whereas lack of premeditation has been found to be the best predictor of antisocial conducts (Lynam & Miller, 2004). On the other hand, the various impulsivity facets measured by the UPPS-P model also contribute to explain a single disorder. For example, research on mobile phone overuse found that negative urgency predicts addictive patterns of use, whereas high sensation seeking predicts phoning while driving, and low premeditation predicts phoning in banned places (Billieux, Van der Linden, & Rochat, 2008).

In addition, specific relationships with addiction symptoms and psychopathology were demonstrated. First, both positive urgency and negative urgency were associated with the degree of smoking dependence, which is consistent with previous findings (Spillane, Smith, & Kahler, 2010). Second, positive (but not negative) urgency was shown to correlate with Internet addiction. This dissociation is unexpected, as both types of urgency have been related to Internet-related disorders

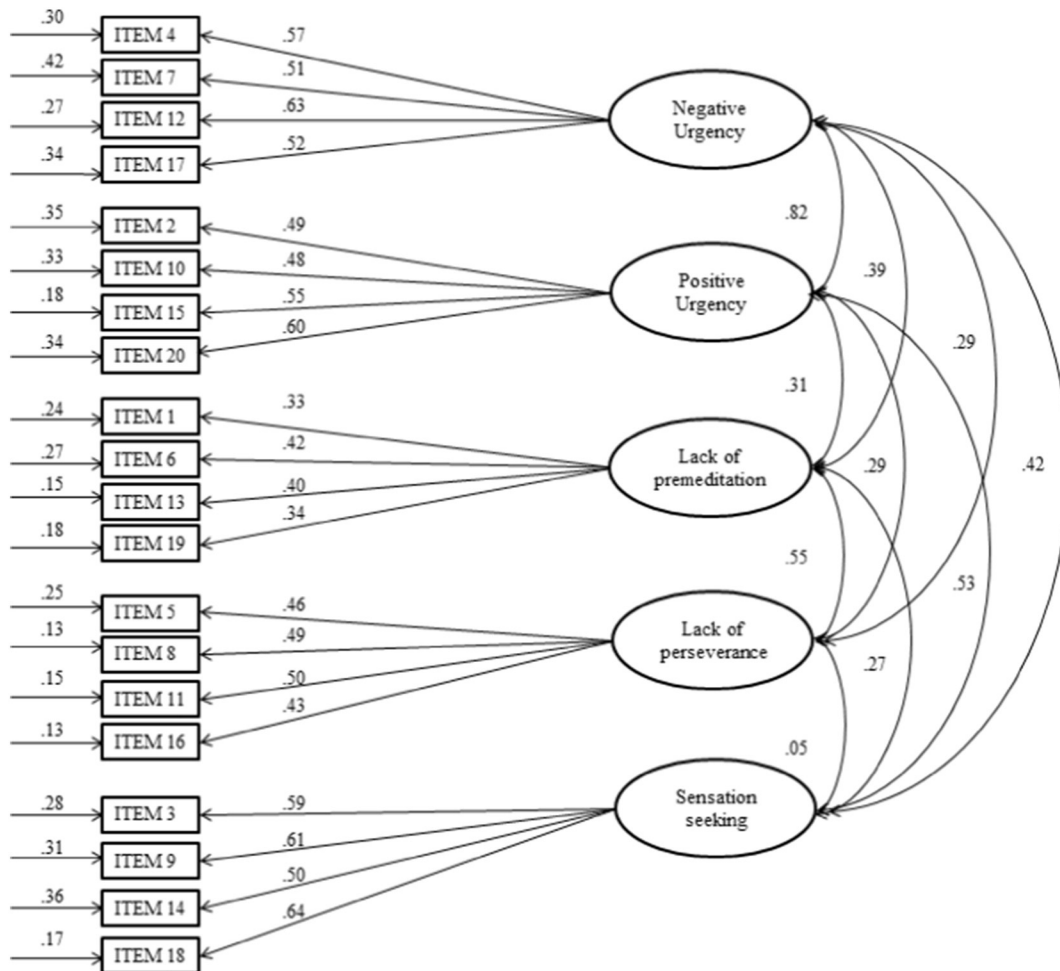


Fig. 1. A five-factor model in which all latent variables are represented by ovals and all manifest variables are represented by rectangles. Single-headed arrows represent error variance and factor loading; double-headed arrows represent correlations between latent variables. The correlations between factors were calculated by LISREL, which took into account the covariance between items.

(Billieux, Gay, Rochat, & Van der Linden, 2010; Billieux et al., 2015; Burnay, Billieux, Blairy, & Larøi, 2015). However, the correlation between negative urgency and Internet addiction symptoms ($r = .26$) would have been significant in a bigger sample. Third, depression was found to be associated with urgency (positive and negative) and lack of perseverance, which is consistent with previous findings (Giovanelli, Hoerger, Johnson, & Gruber, 2013; Smith, Guller, & Zapolski, 2013).

It is worth noting that the Italian S-UPPS-P was a translation of the original S-UPPS-P (Billieux et al., 2012), which was itself developed by selecting the four items that loaded the most strongly on each of the factors of the long version. Such an approach, although widely used in the field of short-form development, has been criticized because it avoids selecting items with the most error variance, which may result in narrower constructs (Smith, McCarthy, & Anderson, 2000).

In conclusion, the current study demonstrated that the Italian S-UPPS-P is a promising short questionnaire to assess impulsivity in research and clinical practice.

Conflict of interest

All authors declare that they have no conflicts of interest.

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References

- Beck, A.T., Steer, R.A., & Brown, G. (1996). *Manual for the Beck Depression Inventory—II*. San Antonio, TX: Psychological Corporation.
- Billieux, J., Gay, P., Rochat, L., & Van der Linden, M. (2010). The role of urgency and its underlying psychological mechanisms in problematic behaviours. *Behaviour Research and Therapy*, *48*, 1085–1096.
- Billieux, J., Rochat, L., Ceschi, G., Carré, A., Offerlin-Meyer, I., Defeldre, A.C., et al. (2012). Validation of a short French version of the UPPS-P Impulsive Behavior Scale. *Comprehensive Psychiatry*, *53*, 609–615.
- Billieux, J., Thorens, G., Khazaal, Y., Zullino, D., Achab, S., & Van der Linden, M. (2015). Problematic involvement in online games: A cluster analytic approach. *Computers in Human Behavior*, *43*, 242–250.
- Billieux, J., Van der Linden, M., & Rochat, L. (2008). The role of impulsivity in actual and problematic use of the mobile phone. *Applied Cognitive Psychology*, *22*, 1195–1210.
- Burnay, J., Billieux, J., Blairy, S., & Larøi, F. (2015). Which psychological factors influence Internet addiction? Evidence through an integrative model. *Computers in Human Behavior*, *43*, 28–34.
- Byrne, B.M. (1994). *Structural equation modeling with EQS and EQS/Windows*. Thousand Oaks, CA: Sage.
- Cándido, A., Orduña, E., Perales, J.C., Verdejo-García, A., & Billieux, J. (2012). Validation of a short Spanish version of the UPPS-P impulsive behaviour scale. *Trastornos Adictivos*, *14*, 73–78.
- Cyders, M.A., Littlefield, A.K., Coffey, S., & Karyadi, K.A. (2014). Examination of a short English version of the UPPS-P Impulsive Behavior Scale. *Addictive Behaviors*, *39*, 1372–1376.
- Cyders, M.A., & Smith, G.T. (2007). Mood-based rash action and its components: Positive and negative urgency. *Personality and Individual Differences*, *43*, 839–850.
- Diamantopoulos, A., & Siguaw, J. (2008). *Introducing LISREL: A guide for the uninitiated*. London, United Kingdom: Sage.
- Dick, D.M., Smith, G., Olausson, P., Mitchell, S.H., Leeman, R.F., O'Malley, S.S., et al. (2010). Understanding the construct of impulsivity and its relationship to alcohol use disorders. *Addiction Biology*, *15*, 217–226.
- Evenden, J. (1999). Impulsivity: A discussion of clinical and experimental findings. *Journal of Psychopharmacology*, *13*, 180–192.
- Gay, P., Rochat, L., Billieux, J., d'Acromont, M., & Van der Linden, M. (2008). Heterogeneous inhibition processes involved in different facets of self-reported impulsivity: Evidence from a community sample. *Acta Psychologica*, *129*, 332–339.
- Giovanelli, A., Hoerger, M., Johnson, S.L., & Gruber, J. (2013). Impulsive responses to positive mood and reward are related to mania risk. *Cognition & Emotion*, *27*, 1091–1104.
- Groman, S.M., James, A.S., & Jentsch, J.D. (2009). Poor response inhibition: At the nexus between substance abuse and attention deficit/hyperactivity disorder. *Neuroscience and Biobehavioral Reviews*, *33*, 690–698.
- Heatherington, T.F., Kozlowski, L.T., Frecker, R.C., & Fagerström, K.O. (1991). The Fagerström test for nicotine dependence: A revision of the Fagerström tolerance questionnaire. *British Journal of Addiction*, *86*, 1119–1127.
- Jöreskog, K., & Sörbom, D. (1996). *LISREL 8: User's reference guide*. Chicago, IL: Scientific Software International.
- Lynam, D.R., & Miller, J.D. (2004). Personality pathways to impulsive behavior and their relations to deviance: Results from three samples. *Journal of Quantitative Criminology*, *20*, 319–341.
- Lynam, D.R., Smith, G.T., Whiteside, S.P., & Cyders, M.A. (2006). *The UPPS-P: Assessing five personality pathways to impulsive behavior*. Unpublished technical report.
- Meerkerk, G. -J., Van den Eijnden, R.J.J.M., Vermulst, A.A., & Garretsen, H.F.L. (2009). The Compulsive Internet Use Scale (CIUS): Some psychometric properties. *Cyberpsychology & Behavior*, *12*, 1–6.
- Smith, G.T., Fischer, S., Cyders, M.A., Annus, A.M., Spillane, N.S., & McCarthy, D.M. (2007). On the validity and utility of discriminating among impulsivity-like traits. *Assessment*, *14*, 155–170.
- Smith, G.T., Guller, L., & Zapolski, T.C. (2013). A comparison of two models of urgency: Urgency predicts both rash action and depression in youth. *Clinical Psychological Science*, *1*, 266–275.
- Smith, G.T., McCarthy, D.M., & Anderson, K.G. (2000). On the sins of short-form development. *Psychological Assessment*, *12*, 102–111.
- Spillane, N.S., Smith, G.T., & Kahler, C.W. (2010). Impulsivity-like traits and smoking behavior in college students. *Addictive Behaviors*, *35*, 700–705.
- Verdejo-García, A., Bechara, A., Recknor, E.C., & Pérez-García, M. (2007). Negative emotion-driven impulsivity predicts substance dependence problems. *Drug and Alcohol Dependence*, *91*, 213–219.
- Verdejo-García, A., Lozano, O., Moya, M., Alcázar, M.A., & Perez-García, M. (2010). Psychometric properties of a Spanish version of the UPPS-P Impulsive Behavior Scale: Reliability, validity and association with trait and cognitive impulsivity. *Journal of Personality Assessment*, *92*, 70–77.
- Whiteside, S.P., & Lynam, D.R. (2001). The five factor model and impulsivity: Using a structural model of personality to understand impulsivity. *Personality and Individual Differences*, *30*, 669–689.
- Zapolski, T.C.B., Cyders, M.A., & Smith, G.T. (2009). Positive urgency predicts illegal drug use and risky sexual behavior. *Psychology of Addictive Behaviors*, *23*, 348–354.