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PSYCHOMETRIC PROPERTIES AND GENDER INVARIANCE FOR THE DICKMAN IMPULSIVITY INVENTORY

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Impulsivity has been recognized as an important personality trait associated with both positive and negative outcomes. Dickman (1990) identified two main dimensions of the construct (functional and dysfunctional impulsivity) and developed an instrument for their assessment, the Dickman Impulsivity Inventory. In this work the questionnaire was administered to a sample of Italian students and data were analyzed in order to test the psychometric characteristics of the instrument in the Italian context. Reliability was tested through KR-20 and composite reliability coefficients, while validity was verified considering IVE (Impulsiveness, Venturesomeness, and Empathy questionnaire) and EPQ-R (Eysenck Personality Questionnaire-Revised). Factor structure was assessed through exploratory and confirmatory factor analysis (EFA and CFA), while multiple-group analyses were performed in order to test gender invariance. Results revealed adequate values for reliability and validity coefficients, confirmed the two-factor structure, and supported partial strict invariance. Gender differences, however, were detected on factor means and the factor covariance.

Key words: Impulsivity; Functional impulsivity; Dysfunctional impulsivity; Dickman Impulsivity Inventory; Impulsiveness, Venturesomeness, and Empathy questionnaire.

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Impulsivity, over the last decades, has gained increasing attention in the psychological research field. The construct, in fact, has showed relevant and interesting relations with many different positive and negative behaviors and life outcomes. Several studies, for instance, linked impulsivity to dangerous behaviors, such as: substance abuse, criminality, gambling, or unsafe sexual habits (e.g., De Wit, 2009; Moeller et al., 2001; Semple, Zians, Grant, & Patterson, 2006; Steel & Blaszczynski, 1998; Vigil-Colet, Morales-Vives, & Tous, 2008; White et al., 1994). Other works documented relations with positive characteristics, like: extraversion, fast information processing, and adaptive coping styles (e.g., Dickman & Meyer, 1988; Eysenck & Eysenck, 1963; Miller, Joseph, & Tudway, 2004; Rim, 1995).

The construct of impulsivity has been extensively studied and several conceptualizations have been proposed. Some scholars suggested a unidimensional conceptualization (e.g., Guilford-Zimmerman Temperament Scale, GZTS; Guilford, Zimmerman, & Guilford, 1976); others proposed more complex models. Patton, Stanford, and Barratt (1995), for instance, elaborated a three-dimensional model of impulsivity, and distinguished motor impulsiveness, attentional impulsiveness, and non-planning impulsiveness. Carver and White (1994) identified fun-seeking, drive, and reward responsiveness as the main components of impulsivity. The fun-seeking dimension describes the desire to live new experiences on the spur of the moment; the drive dimen-

sion refers to the pursuit of desired goals; finally, reward responsiveness makes reference to the inclination to respond positively when rewards occur or are anticipated.

Another crucial contribution was offered by Eysenck (e.g., Eysenck & Eysenck, 1991; Eysenck & Eysenck, 1977). In the author's view, impulsivity has a central role in the structure of personality and, with sociability, represents the core of the primary trait of extraversion (Eysenck & Eysenck, 1963). The author, moreover, identified two main facets of impulsivity: the first is closely associated with extraversion and psychoticism, while the second is more pathological and mainly associated with neuroticism and psychoticism (Eysenck & Eysenck, 1977). Over the decades, these two dimensions have been more precisely defined, and an instrument was devised for their assessment: the Impulsiveness, Venturesomeness and Empathy questionnaire (IVE; Eysenck & Eysenck, 1991). In this latter model, impulsiveness is conceptualized as the tendency to act without realizing risks and represents the more dangerous facet of the construct, mainly tied to psychoticism. Venturesomeness, in contrast, is more connected to extraversion and defines the tendency to perform dangerous actions, on the spur of the moment, but being conscious of their riskiness (e.g., Caci, Nadalet, Baylé, Robert, & Boyer, 2003; Stelmack, 2004).

Interestingly, these two dimensions have often been associated with two other impulsivity dimensions, identified by Dickman (1990). The Dickman model distinguishes functional and dysfunctional impulsivity, and represents one of the most valuable contributions in the study of impulsivity. According to the definition by Dickman, dysfunctional impulsivity (DI) can be conceptualized as the tendency of certain individuals to act with little forethought, performing rapid and inaccurate actions that result in negative consequences. This dimension is associated with disorderliness and with the tendency to perform inaccurate actions "because of an inability to use a slower, more methodical approach under certain circumstances" (p. 101). Functional impulsivity (FI), in contrast, is more associated with excitement and adventurousness, and represents the predisposition of some subjects to act rapidly when this style is congruous (e.g., calculated risks, extreme sports, exciting experiences). Dickman highlighted that these two tendencies are not highly correlated and have different relations with other constructs. In particular, the relationship with IVE and PEN (Psychoticism, Extraversion, and Neuroticism; Eysenck & Eysenck, 1991) traits appeared relevant. Dysfunctional impulsivity, in fact, has been repeatedly tied to impulsiveness (IVE) and psychoticism, while functional impulsivity was related to extraversion, neuroticism, and venturesomeness (Chico, Tous, Lorenzo-Seva, & Vigil-Colet, 2003; Dickman, 1990). Further evidence, in addition, linked the two impulsivity dimensions conceptualized by Dickman to other constructs and behaviors, relevant for both adults and young people, such as: aggression, problems in videogame playing, academic achievement, Big Five dimensions, sensation-seeking traits, and Dark Triad dimensions (e.g., Collins, Freeman, & Chamarro-Premuzic, 2012; Jones & Paulhus, 2011; Vigil-Colet & Codorniu-Raga, 2004; Vigil-Colet & Morales-Vives, 2005). A recent work, for instance, showed relations between dysfunctional impulsivity and the trait of psychopathy of the Dark Triad of personality, while functional impulsivity was mainly associated with narcissism. These results suggest that psychopathic impulsivity may be tied to poor self-regulation, while narcissistic impulsivity involves social engagement and adventurousness (Jones & Paulhus, 2011).

The contribution offered by Dickman (1990) concerning the study of impulsivity, has been highly appreciated in the psychological field, not only for the effectiveness of the model, but also for the usefulness of the questionnaire assessing the two impulsivity dimensions. Dickman developed a 23-item questionnaire for the assessment of functional (FI) and dysfunctional

impulsivity (DI). The instrument (Dickman Impulsivity Inventory, DII) was developed in an English speaking context and, subsequently, adapted for other populations (e.g., Caci et al., 2003; Chico et al., 2003; Gao, Zhang, & Jia, 2011), gaining reasonable approval. The questionnaire, in fact, was used by many authors in several works, involving both young and adult participants (e.g., Brunas-Wagstaff, Bergquist, & Wagstaff, 1994; Gámez-Guadix, Villa-George, & Calvete, 2012; Mobini, Grant, Kass, & Yeomans, 2007; Smillie & Jackson, 2006; Vigil-Colet et al., 2008). Research confirmed in general the two-factor structure of the instrument, and supported the adequacy of the metric properties of the instrument. Some works, however, identified interesting gender-related differences, and highlighted the usefulness of better exploring gender biases (Caci et al., 2003; Cross, Copping, & Campbell, 2011).

Despite the approval of the questionnaire in the psychological field, an Italian version of the instrument has never been tested, nor gender biases accurately evaluated. Verifying gender differences and differential item functioning (DIF) of questionnaires is a central aim in order to devise valid and reliable psychometric tools. The aim of this work, therefore, was to test the metric properties of the DII in the Italian context, testing also its adequacy for both male and female samples.

METHOD

Participants and Procedure

Participants were 382 Italian higher-school students aged between 14 and 22 (males 174; M_{age} = 16.48, *SD* = 1.69). Participants were recruited during school hours and completed a booklet with three tests: the Dickman Impulsivity Inventory (DII; Dickman, 1990); the Impulsiveness, Venturesomeness, and Empathy questionnaire (IVE; Eysenck & Eysenck, 1991); and the Eysenck Personality Questionnaire-Revised (EPQ-R; Eysenck & Eysenck, 1991). The participation in the study was anonymous and voluntary, and students were informed that they could interrupt participation at any time without any repercussions. The headmasters and class teachers provided permission for the study.

Instruments

Impulsiveness, Venturesomeness, and Empathy (IVE) Questionnaire

The instrument is a 54-item questionnaire in a *yes/no* format, and includes three scales: Impulsiveness (19 items), Venturesomeness (16 items), and Empathy (19 items). The first scale (I) represents the pathological aspect of impulsivity, related to psychoticism (e.g., "Do you need to use a lot of self-control to keep out of trouble?"; "Before making up your mind, do you consider all the advantages and disadvantages"). Venturesomeness (V), in contrast, is defined as a risk-taking disposition more connected to extraversion (e.g., "Do you quite enjoy taking risks?"; "Would you enjoy parachute jumping?"). The Empathy (E) scale was originally included as a buffer to relieve the monotony, but turned out to be a useful scale of its own (e.g., "Would you feel sorry for a lonely stranger?"; "Do you get very upset when you see someone cry?"). In the present work, the Italian version of the instrument was used (Dazzi, Pedrabissi, & Santinello, 2004).

Authors provided support to the adequacy of the three-factor structure and to the metric properties of the three scales (alpha coefficients for Impulsiveness, Venturesomeness, and Empathy are: .77, .83, .69, respectively).

Eysenck Personality Questionnaire-Revised (EPQ-R)

The questionnaire is a well-known 100-item instrument for the assessment of the Eysenck PEN-L traits (Psychoticism, Extraversion, Neuroticism, and Lie). The Psychoticism scale (32 items; e.g., "Would you take drugs which may have strange or dangerous effects?"; "Is it better to follow society's rules than go your own way?") describes coldness, impersonality, hostility, low emotionality, and lack of friendliness. Extraversion (23 items; e.g., "Do you enjoy co-operating with others?"; "Are you a talkative person?") defines excitement, liveliness, activity, sociability, talkativeness, and low reliability. Neuroticism (24 items; e.g., "Are your feelings easily hurt?"; "Do you suffer from 'nerves'?") define worried people, moody, fed-up, irritable, tense, apprehensive, and nervous. Finally, the Lie scale measures dissimulation tendencies (21 items; e.g., "Have you ever cheated at a game?"; "Do you always wash before a meal?"). The response scale to each item is dichotomous, *yes/no*. In the present study the Italian version of the scales was used (Dazzi et al., 2004). The internal consistency coefficients ranged from .76 to .90, and confirmatory factor analysis (CFA) supported the factor structure and its invariance across genders (Dazzi, 2011).

Dickman Impulsivity Inventory (DII)

The questionnaire assesses two dimensions of impulsivity: functional (FI) and dysfunctional impulsivity (DI). The instrument contains 23 items dichotomously scored in a *true/false* format. The FI scale contains 11 items and describes the more positive aspects of impulsivity. DI, in contrast, contains 12 items and describes the more negative and dangerous aspects of the construct. The questionnaire was developed through factor analytic procedures and support has been found for the validity and reliability of both scales (FI, alpha = .74; DI, alpha = .85). Results, moreover, have been supported in cross-cultural studies (e.g., Chico et al., 2003; Gao et al., 2011). Because an Italian version of the instrument is not currently available, in the present work the questionnaire was translated from English to Italian and then back-translated by a native English speaker. The Italian version of the items is available upon request from the author.

Analytic Strategy

In order to test the psychometric properties of the instrument in the Italian context, several analyses were performed. Specifically, reliability of the two subscales was evaluated through Kuder-Richardson-20 (KR-20; Kuder & Richardson, 1937) and composite reliability coefficients (Bagozzi & Yi, 1988; Bentler, 2009).

Validity was also tested. In particular, convergent validity was evaluated looking at correlations between FI and DI scales, and PEN-L and IVE scores. Moreover, the factor structure of the Dickman Impulsivity Inventory was tested using exploratory factor analysis (EFA) and confirmatory factor analysis (CFA). EFA and parallel analysis (PA) were run in a random subsample

of 200 participants (females 103; M_{age} = 16.45, *SD* = 1.66) and were used to determine the appropriate number of common factors underlying the scale. EFA was performed using Mplus7 (Muthén & Muthén, 2012), and WLSMV (weighted least squares mean and variance-adjusted; Muthén & Muthén, 2012) as the estimator. This method is recommended for binary or ordinal observed data (e.g., Brown, 2006; Flora & Curran, 2004). Geomin oblique rotation was used, and two solutions were tested, respectively with one and two factors. PA, moreover, was performed using the free software FACTOR (Lorenzo-Seva & Ferrando, 2006; see also Timmerman & Lorenzo-Seva, 2011) and considering tetrachoric correlations (500 random correlation matrices); principal component analysis (PCA) was used as the extraction method.

The CFA model was tested on the total sample and factors were allowed to correlate. The goodness of fit of the models was evaluated by means of several fit indices: χ^2, comparative fit index (CFI; Bentler, 1990), standardized root mean square residual (SRMR; Bentler, 1995),[1] and root mean square error of approximation (RMSEA; Browne & Cudeck, 1993) with its 90% confidence interval (90% CI), and the test of close fit (CFit; Browne & Cudeck, 1993). A solution fits the data well when χ^2 is nonsignificant ($p \geq .05$): however, this statistic is sensitive to the sample size and, therefore, in the evaluation of models the other fit measures were also taken into account. Specifically, CFI indices close to .95 (.90 to .95 for reasonable fit), SRMR values equal or less than .08, and RMSEA smaller than .06 (.06 to .08 for reasonable fit) with CFit nonsignificant, support a good fit of the model (see Brown, 2006; Hu & Bentler, 1999; Marsh, Hau, & Wen, 2004).

Multiple-group analyses were finally performed in order to test invariance across gender. Multiple-group confirmatory factor analyses (MGCFA) were implemented applying Mplus 7; we used WLSMV as estimator (Muthén & Muthén, 2012), and theta parameterization (Muthén & Asparouhov, 2002; Muthén & Muthén, 2012). In the first step the two-factor model was fitted on the two gender groups separately, and afterward configural, scalar, and strict invariance were tested. In all models, indicators were the dichotomously scored items of the DII, therefore, metric invariance was not tested. Metric invariance models, in fact, are not identified with binary variables, since residual variances (scale factors in delta parameterization) should be allowed to vary across groups (Muthén & Muthén, 2013). Equivalence of factor variances, covariance, and means was tested as well. To compare nested model Mplus 7 DIFFTEST (difference test) option (Asparouhov & Muthén, 2006) was used. Invariance was supported if χ^2 DIFFTEST results were nonsignificant. Also, the ΔCFI index (test of change in CFI) was considered. A ΔCFI value below or equal to |.01| suggests the equivalence of models (Cheung & Rensvold, 2002).

Results

Exploratory Factor Analysis

Exploratory factor analysis suggested the adequacy of the two-factor solution, $\chi^2(208)$ = 236.220, $p \cong .087$; RMSEA = .026 [.000, .041]; CFit ≅ .998; CFI = .980; SRMR = .080,[2] and this result was supported by parallel analyses as well. In the two-factor solution all indicators loaded on the intended factor and loadings were all significant (ranging between .25 and .93 for DI, and between .42 and .83 for FI), and higher than cross-loadings (for DI scale cross-loading were identified for Items 4, 7, and 22; while for FI cross-loadings were identified for Items 15 and 2 only). The two factors showed a low but significant correlation, r = .218, $p < .05$.

Confirmatory Factor Analysis

The confirmatory model was run on the total sample and results were not satisfactory: $\chi^2(229) = 604.364$, $p \cong .001$; RMSEA = .066 [.059, .072]; CFit ≅ .000; CFI = .89; WRMR = 1.473. Therefore, according to the suggestions of modification indices, some items were progressively removed. Specifically, Items 8 and 20 ("I have often missed out on opportunities because I couldn't make up my mind fast enough"; "People have admired me because I can think quickly") were eliminated from the FI scale, while Items 4, 17, and 23 were eliminated from DI ("I enjoy working out problems slowly and carefully"; "Many times the plans I make don't work out because I haven't gone over them carefully enough in advance"; "I rarely get involved in projects without first considering the potential problems"). These items, in EFA analysis, were characterized by low factor loadings, or loaded significantly on both factors.

The model tested without these five items, reported in Table 1, showed an adequate fit: $\chi^2(134) = 243.483$, $p \cong .001$; RMSEA = .046 [.037, .055]; CFit ≅ .740; CFI = .962; WRMR = 1.092. As shown in the table the two new scales were composed by nine items each; all factor loadings were high and significant, and factors were moderately correlated.

TABLE 1
CFA loadings and factor correlation

Items	Factor loadings
FI Item2	.82
FI Item3	.61
FI Item5	.61
FI Item6	.67
FI Item11	.70
FI Item12	.75
FI Item15	.68
FI Item16	.66
FI Item19	.34
DI Item1	.88
DI Item7	.78
DI Item9	.90
DI Item10	.40
DI Item13	.35
DI Item14	.53
DI Item18	.83
DI Item21	.79
DI Item22	.79
Correlation between factors	.47

Note. FI = functional impulsivity; DI = dysfunctional impulsivity. All coefficients are significant, $p < .001$.

Multiple-Group Factor Analysis

Results of MGCFA are reported in Table 2. As indicated in the table, the two-factor model fitted adequately on both male and female samples, and the configural model was also supported. Scalar invariance, instead, was supported only releasing the constrain of Item 12 ("I don't like to do things quickly, even when I am doing something that is not very difficult"). Strict invariance was supported as well, indicating that items showed the same residual variance across groups. Differences across groups, however, were found on factor correlation and on FI factor mean. Correlation between FI and DI, in fact, was higher on the female group, while FI mean was higher on the male sample.

Reliability

Reliability was measured on the total sample and using only the 18 items selected for the Italian version of the DII. Results are reported in Table 3. Both KR-20 and composite reliability indices reached satisfactory values.

Relations with Other Constructs

Relations of DI and FI scales (18 Italian items) with PEN-L and IVE scores are reported in Table 4. FI showed relevant correlations with Venturesomness and Extraversion, while DI reported a strong correlation with Impulsiveness and Psychoticism (alpha coefficients for PEN-L scales were, respectively: .73, .80, .81, and .75, while for IVE they were .82, .75, and .73).

Discussion

In the present work the psychometric characteristics of the Dickman Impulsivity Inventory were tested in the Italian context. Specifically, reliability, factor structure, invariance across genders, and relations with IVE and PEN-L scales were examined. Results confirmed the adequacy of the two-factor structure. EFA and CFA, however, suggested the removal of five items from the original version of the instrument. Specifically, Items 17, 4, 8, 20, and 23 were removed. These items, loaded significantly on both factors or showed low factor loadings. The Dickman Impulsivity Inventory in the Italian version, therefore, was composed of 18 items, nine for each of the two scales.

Confirmatory factor analysis, performed using these 18 items, revealed adequate fit indices, and highlighted a significant but not high correlation between the two factors. This result is consistent with findings of previous cross-cultural work (e.g., Chico et al., 2003; Gao et al., 2011) and with Dickman's (1990) results. It is, moreover, interesting to note that Items 4, 8, 20, and 23, which were removed in the Italian version of the questionnaire, were found problematic also in other cross-cultural studies (Caci et al., 2003; Chico et al., 2003; Claes, Vertommen, & Braspenning, 2000).

Reliability of the 18-item questionnaire was tested through KR-20 and composite reliability coefficients, and results were satisfactory for both scales. It could be observed that composite

TABLE 2
Multiple-group analyses: Indices of test of invariance

Model	χ^2	*df*	$p\cong$	$\Delta\chi^2$	*df*	*p*	CFI	ΔCFI	RMSEA	90% CI	*p*	WRMR
CFA total sample	243.483	134	0.00				.962		.046	[.037, .055]	.740	1.092
Model male	157.087	134	0.08				.977		.031	[.000, .050]	.949	0.870
Model female	213.140	134	0.00				.962		.053	[.039, .066	.332	0.999
Configural	365.306	268	0.00				.969		.044	[.032, .054]	.828	1.324
Scalar	389.765	282	0.00	27.975	14	.014	.965	.004	.045	[.033, .055]	.789	1.379
Scalar_ 12	383.115	281	0.00	20.343	13	.087	.967	.002	.044	[.032, .054]	.833	1.364
Strict	398.950	298	0.00	23.346	17	.138	.968	–.001	.042	[.031, .053]	.890	1.455
Var-Cova	436.135	284	0.00	18.937	3	.003	.951	.016	.053	[.043, .063]	.303	1.529
Variances	381.924	283	0.00	0.612	2	.737	.968	–.001	.043	[.031. .053]	.863	1.364
Mean	403.090	283	0.00	10.988	2	.004	.962	.005	.047	[.036. .057]	.667	1.424
Mean_FI	380.870	282	0.00	0.064	1	.799	.968	–.001	.043	[.031. .053]	.861	1.364

Note. $\Delta\chi^2$ = chi square difference test; CFI = comparative fit index; ΔCFI = test of change in CFI; RMSEA = root mean square error of approximation; 90% CI = RMSEA 90% confidence interval; WRMR = weighted root mean square residual; Scalar_ 12 = invariance model releasing the constrain of equivalence for loading of Item 12; Var-Cova = invariance of variances and covariance; Mean_FI = invariance model releasing the constrain of equivalence for the FI factor mean.

TABLE 3
Reliability coefficients

	KR-20	Composite WLSMV
FI	.77	.87
DI	.81	.90

Note. KR-20 = Kuder-Richardson coefficient; Composite WLSMV = composite reliability computed using weighted least squares mean and variance-adjusted (WLSMV) estimates; FI = functional impulsivity; DI = dysfunctional impulsivity.

TABLE 4
Correlation of DI and FI with PEN-L and IVE scales

Measures	DI	FI
Impulsiveness	.80***	.38***
Venturesomeness	.22***	.41***
Empathy	–.08	–.22***
Psychoticism	.49***	.32***
Extraversion	.29***	.44***
Neuroticism	.22***	–.23***
Lie	.18***	.29***

Note. DI = dysfunctional impulsivity; FI = functional impulsivity; IVE = Impulsiveness, Venturesomeness, and Empathy; PEN-L = Psychoticism, Extraversion, Neuroticism, and Lie.
***$p < .001$.

reliability coefficients reached values higher than those obtained from KR-20. This result, however, was expected. Composite reliability, in fact, was computed using WLSMV factor loadings and, as highlighted by several authors (Barbaranelli, Lee, Vellone, & Riegel, 2014; Raykov & Marcoulides, 2011), coefficients derived by polychoric correlations might be upward-biased.

The convergent validity of the two 9-item scales was tested analyzing their relations with IVE and PEN-L scales, and results were satisfactory. In accordance with evidence from previous research, and with Dickman's (1990) findings (see Chico et al., 2003; Claes et al., 2000), FI showed relevant correlations with Venturesomness and Extraversion, while DI reported stronger correlations with Impulsivity and Psychoticism. This pattern of results, as argued by Dickman, suggests that DI represents the more dangerous and pathological aspect of impulsivity, while FI should be conceived as the more positive facet of the construct, mainly associated with adventurousness and activity. In future research, to further validate the scale, it would be interesting to explore the relations between FI, DI, and other individual dispositions such as the locomotion construct, which defines the aspect of self-regulation concerned with movement and oriented toward action without distractions or delays (Kruglanski et al., 2000; see also Falvo, Visintin, Capozza, Falco, & De Carlo, 2013; Pierro, Giacomantonio, Pica, Kruglanski, & Higgins, 2013; Trifiletti, Capozza, Pasin, & Falvo, 2009). Furthermore, it would be interesting to explore the role of FI and DI in the organizational field

where individual aspects have been recognized as crucial variables (Falco, Dal Corso, De Carlo, & Di Sipio, 2008; Falco et al., 2017; Zecca et al., 2015).

The invariance across gender of the 18-item questionnaire was tested through MGCFA. Results supported strict invariance, but indicated to release the constrain of Item 12 in order to achieve an adequate fit in the scalar model. Invariance analyses, moreover, highlighted differences across groups on the factor mean of FI, and on the correlation between the two factors. Specifically, correlation between FI and DI was higher in the female sample, while the factor mean of FI was higher for the male group. This result, however, is not surprising since gender differences on impulsivity scores were found also by other investigators. In several works, in fact, males showed higher means in the functional facet of impulsivity (e.g., Caci et al., 2003; Claes et al., 2000; Cross et al., 2011). Overall, MGCFA suggested invariance across genders of the DII in the Italian context. Factors have the same meaning across groups and, excluding Item 12, where some bias was found, the item-trait relations, and the accuracy of items as measure of the construct were analogous across groups. Results, moreover, indicate that males and females differ on their functional impulsivity levels. Further evidences, however, are highly recommended in order to better understand gender differences on impulsivity.

In sum, results of this work provided support to the adequacy of the psychometric properties of the DII in the Italian context indicating, however, the exclusion of five items from the original version. Reliability indices were satisfactory, and the pattern of relations between FI, DI, IVE, and PEN-L scores supported convergent validity. A new contribution, moreover, was offered testing the invariance of the instrument across genders. The findings of this study seem interesting; however, some limitations could be recognized. The sample of participants, for instance, was mainly composed by young people while in future research, it would be useful to include adult subjects as well. In addition, all participants were recruited in the North of Italy and further investigations should be extended to other Italian regions.

NOTES

1. Also, the weighted root mean square residual (WRMR; Yu, 2002; Yu & Muthén, 2002) index was used to evaluate CFA and MGCFA models. The WRMR is a fit index recently introduced and represents an alternative to SRMR, which can be used with the robust WLS estimators (WLS, WLSM, and WLSMV). The WRMR is well suited when working with categorical (or binary) or non-normal continuous data (or if variables have large variances). Yu suggested a cutoff value close to 1.0 for models with binary outcomes when $N \geq 250$.
2. For the one-factor solution of EFA, fit indices are the following: $\chi^2(230) = 647.367$, $p \cong .000$; RMSEA = .095 [.087, .104]; CFit ≅ .000; CFI = .707; SRMR = .170.

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