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THE ADAPTATION OF THE BIG-FIVE IPIP-50 QUESTIONNAIRE IN ROMANIA REVISITED

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Abstract: *Besides the proprietary questionnaires that asses the five traits of the Big Five Model, that are worldwide available, there is also an internationalscientificcollaborative public domain project that developed IPIP-50 questionnaire that measures the five traits of the model. IPIP-50 has been translated and validated in Romania. The study had some methodological limitations but the instrument appeared psychometrically sound. Thus, we conducted two studies for the improvement of the Romanian IPIP-50, in which the translation has tested, psychometric properties of Romanian IPIP-50 were further tested and we replicated to a large degree some of the findings of the previous study of Romanian IPIP-50 adaptation.*

Key words: *IPIP – 50, Big-Five Model, test adaptation*.

1. Introduction

Personality theory and measurement have begun quite early in the history of psychology. However, it was only recently that researchers and practitioners generally embraced a unified or standardized theory and application in measurement and conceptualization of personality. As John & Srivastava (1999) put it „After decades of research, the field is approaching consensus on a general taxonomy of personality traits, the "Big Five" personality dimensions" (p.2). Rooted in early scientific work of personality psychologists who tried to find taxonomies of personality traits and based also on contributions from more personality researchers, the Big Five traits were developed (see John & Srivastava, 1999 for a detailed discussion) and has been until present days a widely useful and researched model of personality, which comprise the 5 personality traits of: Extraversion, Agreeableness, Emotional stability (Neuroticism) and Openness to experience, though the factors may have different labels according to different research traditions.

The Big Five model of personality has been cross-culturally widely researched (McCrae & Costa, Jr.; Paunonen et al., 1996; Schmitt, McCrae & Benet-Marttınez, 2007), has been found appropriate in totally different cultures, and has potential application in different areas of research and applied psychology like: clinical psychology (e.g. Trull, & Widiger, 2013) and psychiatry (e.g. Terracciano & McCrae, 2006), organizational

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psychology (Kumar, 2009) and educational psychology (e.g. Vorkapić, 2012) among many others.

Actually there are two widely known instruments to measure the five traits of the five factor model of personality (FFM) which are: NEO PI-R/FFI (Costa,& McCrae, 1992) translated and adapted in many languages (Goldberg et al., 2005; Goldberg et. al., 2006), available in many countries around the world, and a public domain pool of items called International Personality Item Pool, based on Goldberg (1992) work, who further support the project and research with FFM within public domain framework (see for example, Goldberg, 1999, Goldberg et al., 2006). The advantages of such international collaboration on line platform could, according to the last cited authors, lead to improvement of research regarding FFM.

The research with the 50-item IPIP representation of the Goldberg (1992) markers for the Big-Five factor structure yielded also cross-culturally empirical evidence in showing the instrument psychometrically sound (e.g. Gow, Whiteman, Pattie, & Deary, 2005; Mlačić, & Goldberg, 2006; Mlačić, & Goldberg, 2007; Zheng et al., 2008).

The instrument has been also validated in Romania by Rusu, Maricutoiu, Macsinga, Vîrgă, and Sava (2012). The results were quite favourable regarding psychometric properties. The Romanian IPIP-50, with some exceptions, has yielded adequate to excellent psychometric properties. However, though the process of instrument adaptation used translation back-translation method (Brislin, 1970) the authors did not test the equivalence of the two instruments on bilingual samples, a practice with better compliance to International Test Commission, Guidelines for Translating and Adapting Tests (International Test C omission, 2010), and successfully used in previous studies in Romania (e.g. Stevens et al., 2012, 2013), the sample used for testing the factorial validity contained a majority of young college females (70,83%, age mean = 21,03), there was no test retest reliability assessed, which is a very important form of reliability in this case, a newly adapted instrument. According to McCrae et al. (2011), based on empirical evidence on NEO inventories, the internal consistency should not be regarded as substitute of test retest reliability because this form of reliability only, predict the validity of an instrument. Also, regarding Confirmatory Factor Analyses, in order to minimize possible Type I and II errors some combinational rules of CFA indexes, that were not reported in the original article of Romanian IPIP-50 adaptation, need to be calculated and reported (Hu & Bentler, 1999). Also, the research article did not report some important descriptive data, which makes for example cross-cultural comparisons impossible among others. Cross-cultural comparisons could for example show the necessity of deriving national norms for psychological instruments, a practice that is not always endorsed by various test developers and psychologist around the world (e.g. Oakland, Poortinga, Schlegel, & Hambleton, 2010) and recommended by International Test Commission, Guidelines for Translating and Adapting Tests (International Test Commission, 2010) as well as other national organizations with or without regulating power regarding psychological assessment practices. Consequently, we sought to improve the research on Romanian IPIP-50 by overcoming the named limitations of the previous cited adaptation study. Although, we have no specific hypothesis we conducted the studies guided by this objective.

2. Study I
2.1. Method

Participants

We recruited 15 bilingual 9th grade high-school participants (M=15.33, SD=.49), 73 % girls and 27 % boys, of which declared 100% Romanian, 73% Orthodox, 7 % Christian, 20% Atheist who completed both versions (English and Romanian) of IPIP-50 questionnaire. All participants had as main high-school specialization IT.

Measures/Instrumentation

IPIP- 50: Building on previous research that considers five personality traits as essential personality traits and using dimensions reducing techniques of factor analysis Goldberg (1992) developed in three studies, with rigorous scientific methodology, a quite small set of markers (50) which capture very well the big five traits of personality, previously theorized and researched. The resulting instrument has been called IPIP-50. The instrument yielded promising initial promising properties regarding factorial validity, convergent validity, as well as good internal consistency (Alpha Cronbach indexes ranging from .82 to .97) for the five correlated factors. The IPIP-50 is in the public domain and has five scales that measure: (1) Extraversion, (2) Agreeableness, (3) Conscientiousness, (4) Emotional Stability, and (5) Intellect/Imagination), each comprising 10 items, self-rated on five levels Likert sale. ranging from Very Inaccurate to Very accurate. Example of items are: *Am always prepared.* (Conscientiousness) or *Am relaxed most of the time* (Emotional Stability). Since its creation and made available in the public domain there has been a large body of research that further tested the IPIP-50 cross-culturaly and established various other types of validity and reliability like: perdictive validity in organisational domain in India (Kumar and Bakhshi, 2010), factorial and concurent validity as well as internal consistency in UK (Gow et al., 2004), internal consitency, factorial and concurent validity in China on heterosexual and homosexual samples (Zheng et., al 2008) to name a few of them.

IPIP-50 Romanian Version: We used the translated version of the Romanian IPIP-50 included in the Appendix of the research article of Rusu et al. (2012) which adapted the instrument on Romanian samples establishing factorial validity for the correlated factors, internal consistency (alpha Cronbach values ranged between .73 and .84) convergent as well as predictive validity. The main difference in wording of the IPIP-50 markers and Romanian IPIP-50 items, is that the personal pronoun *I* is always included in the beginning of each sentence.

The Background questionnaire contained open questions which captured age, gender, ethnicity and religion

2.2. Procedures

After obtaining institutional agreement and an informed consent were we stated the general goals of the study, as well as that testing is anonymous, and that feed-back will be provided, we administered paper a pencil version of the IPIP-50, original and translated questionnaires with 2 days time elapsed, in a counterbalanced order. The participants were chosen by the recommendation of the IT professor regarding their English

proficiency level. The participants were not told that they will complete the same questionnaire in different languages and they were instructed to respond exactly the way they understand the items, they were also not been told in advance about the project. The participants were required to write a personal code on each page in order to identify questionnaires. After administration, the students who wanted, could anonymously took the completed English version questionnaire with his or her written code and copy the responses in an electronically Internet based questionnaire which provided feedback, based on an international sample (http://personality-testing.info/tests/IPIP-BFFM/). The participants were told that the feed-back provides only a general orientation of self-personality assessment and is not a completely professional assessment.

2.3. Results

When using parametric inference statistics procedures like t test, one of most important requirement is that the assumption of normality must not be violated, especially, in low samples between 15-30 persons where the calculation of Shapiro-Wilk normality test is required (Goos, & Meintrup, 2016) then after calculations, none of the Shapiro-Wilk test of the Romanian and English versions of IPIP-50 reached significance at .05 level, so we compared the means of the two conditions of each scale, namely English and Romanian using paired t tests and adjusting the significance level using Bonferonni correction, to guard against Type I error (Armstrong, 2014), thus the resulting accepted significance level was .01.

Table 1 presents the results of the means comparisons.

Based on the results obtained, we can conclude that the two versions of questionnaire IPIP-50 have linguistic equivalence, since none of the t test were significant. Furthermore we can test now the temporal stability of the instrument by correlating the two equivalent measures. In table 2, we present the resulted correlations of the scales between test an retest of the IPIP-50 Romanian version. As we can see from the data presented above test retest reliability have shown Extraversion, Emotional stability and Openness scales, as having a above minimally acceptable test retest coefficients threshold (Deyo, Diehr, & Patrick,1991), but Agreeableness and Consciousness fell below the threshold.

Comparisons between the two versions of IPIP-50 Table 1

Scale	M	SD	T	df	p
Extraversion Ro	36.67	5.11	1.26	14	.23
Extraversion En	35.27	7.24			
Agreeableness Ro	38.13	4.67	.68	14	.51
Agreeableness En	37.40	3.96			
Consciousness Ro	32.40	5.52	-.26	14	.80
Consciousness En	32.73	5.79			
Emotional stability Ro	24.67	6.85	-2.02	14	.06
Emotional stability En	27.07	5.32			
Openness Ro	39.80	4.96	.82	14	.42
Openness En	39.00	5.90			

Test retest Correlation Table Table 2

Scale	r
Extraversion	.81**
Agreeableness	.54*
Consciousness	.62*
Emotional stability	.74**
Openness	.77**

**P<.01 *p<.05

2.4. Discussion

Our study showed IPIP-50 translation as equivalent to the original and showed also an acceptable temporal stability for 3 of the scales whereas 2 scales yielded unsatisfactory reliability correlation coefficients. Given the low sample that included only adolescent population and a low correspondent statistical power the results should be regarded rather preliminary. Some possible limitations regarding understanding of the items could have come from the understanding of plain English since the students had as main specialization IT and also the unexpected administering of the questionnaire could have had and impact on motivation for accurateness of completing, Regrettably, we have not assessed their motivation for the participation in the project.

3. Study II

3.1. Method

Participants

We used the data provided by the http://personality-testing.info/_rawdata/ under Creative Commons License. The withdrawn Romanian Sample, N=135 had age between14-53 years, (M=24.68, SD=12.80), 47 % males, 52 % females, 1% other, 96 non native English speakers, 6 % native English speakers completed IPIP-50 questionnaire on-line. The withdrawn U.S.A. Sample N=8753 had age between13-99 years, (M=26.91, SD=8.25) (all declared age above 99 has been regarded as missing, total 22 persons), 33.6 % males, 65.6 % females, .7% other, .1% Missing,9.3 %non native English speakers, 90.2 % native English speakers, .4% missing, completed IPIP-50 questionnaire on-line. The withdrawn Germany Sample N=135 had age between13-66 years, (M=27.80, SD=9.45), 45 % males, 53.9 % females, .5 % other, .5% missing, 81% non native English speakers, 19 % native English speakers, completed IPIP-50 questionnaire on-line.

Measures/Instrumentation

IPIP- 50: Was the same original instrument used in study 1the main difference being that the personal pronoun *I* is always included in the beginning of each sentence, which fits exactly the Romanian IPIP-50

3.2. Procedures

The data was collected anonymously on-line using the website (http://personality-testing.info/tests/IPIP-BFFM/ in 2012, with interactive on-line

personality testing. Participants were informed that their responses would be recorded and used for research at the beginning of the test and asked to confirm their consent at the end of the test. The participants received feedback and were required to indicate whether responses are accurate enough to be used in research.

3.3. Results

We first split the file in order to analyze the data coming from Romanian participants (N=135) then we used the package *sem* from open source software R, to analyze the data by fitting two Confirmatory Analyses Models, one with 5 correlated factors and one without correlated factors. Accoding to Hu and Bentler (1999) we used indexes that best take account of acceptable Type I and errors in low samples and corrected them with Satorra-Bentler correction (e.g. Satorra,& Bentler, 1994), except for SRMR index. The indexes are presented in the table 3:

CFA Indexes of IPIP-50 Table 3

Model	Corrected $\chi 2$***	Df	Corrected CFI	Corrected RNI	SRMR
5 uncorrelated factors	2045.51	1175	0.68	0.68	0.15
5 correlated factors	1963.38	1165	0.71	0.71	0.10

As we can see the model with 5 correlated factors yielded better fit indexes. However, not both models fit the data when we consider Huand Bentler (1999) and Houper, Couglan and Mullen (2008) recommendations for CFA in low samples, that is both RNI and CFI< .90 and SRMR > .10 for a model misfit. We can see also that in the model with correlated factors both RNI and CFI fell below the correspondent named threshold indicating a possible misspecified factor loadings (Fan, & Sivo, 2005).

We examine further the internal consistency of the instrument as well as sale inter-correlations. To have a better picture of this type of reliability measure, we present both Raw Alpha as well as Standardized Alpha which is based upon the correlations rather than the covariances (tab. 4).

Also the Pearson Inter-scales Correlations are presented in table 5.

Internal consistency indexes show acceptable to excellent reliability and some scales are mildly significantly intercorrelated, results that together with CFA results, replicate to a large degree Rusu et al. (2012) results.

Internal consistency indexes of IPIP-50 Table 4

Scale	Alpha Cronbach	Standardized Alpha Cronbach
Extraversion	0.91	0.91
Agreeableness	0.81	0.81
Consciousness	0.80	0.80
Emotional stability	0.81	0.81
Openness	0.81	0.82

Pearson inter scale correlations of the IPIP-50 Table 5

Scale	Extraversion	Agreeableness	Consciousness	Emotional stability	Openness
Extraversion	-	0.41**	0.17*	0.36**	0.35**
Agreeableness	-	-	0.17*	0.11	0.22**
Consciousness	-	-	-	0.18*	0.04
Emotional stability	-	-	-	-	0.21*
Openness	-	-	-	-	-

**p < .01. *p < .05

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Given the possibility the data set permits cross-cultural comparisons, we performed further exploratory comparisons between Romanian samples and US and German samples using one way ANOVA. The descriptives of samples analyzed are presented in table 6.

Descriptive data of IPIP – 50 scales by country Table 6

Country	U.S.A.				Germany				Romania			
	N	M	SD	G1/G2*	N	M	SD	G1/G2*	N	m	SD	G1/G2*
Scale												
E.	8753	30.69	3.35	.13/1.66	191	29.94	3.54	.16/.571	135	30.98	3.05	.37/-.19
A.	8753	31.83	3.34	-.19/1.7	191	31.18	3.00	-.14/-.14	135	31.55	3.48	-.29/1.16
C.	8753	31.71	3.75	-.06/1.14	191	31.76	3.24	.11/-.378	135	31.90	3.81	.24/.843
E.S.	8753	30.19	6.59	.04/-.53	191	30.12	5.89	.10/-.48	135	31.52	6.90	-.29/-.45
O.	8753	33.29	3.74	-.28/.98	191	33.81	3.53	-.30/-.12	135	33.48	3.27	-.18/-.20

*G1=abbreviation of skewness; *G2= abbreviation of kurtosis

When running one way ANOVA for mean comparisons, we found a main effect of Nationality on Extraversion, $F(2, 9076) = 5.218$, $p = .005$. Post- hoc analyses using Tukey's HSD indicated that Extraversion was lower for German participants than for US participants ($p = .006$) and Romanian participants ($p = .016$), but Extraversion did not differ significantly between US and Romanian participants ($p = .573$). Furthermore, we found a main effect of nationality on Agreeableness, $F(2, 9076) = 3.954$, $p = .019$. Post- hoc analyses using Tukey's HSD indicated that Agreeableness was lower for German participants than for US participants ($p = .022$), but Agreeableness did not differ significantly between US and Romanian participants ($p = .592$) and between German participants and Romanian participants ($p = .594$). All other comparisons regarding Consciousness, Openness and Emotional stability factors did not proved statically significant.

3.4. Discussion

Our results are to a large degree similar to those reported by Rusu et al. (2012) regarding factorial structure of the IPIP-50, in that the model with 5 correlated factors best fitted the data, keeping Type I and II errors at minimum according to recommendations made by Hu and Bentler (1999). However, misspecification of factor loadings might be possible. We also found significant low and moderate correlations

between some of the factors although the correlation differs in significance and magnitude from the previous cited study. We should note here that our sample was much lower than the sample used in previous cited study and of course the probability to find significant correlation was accordingly lower. Internal consistency indexes were also similar though much higher. It was only Consciousness scale that had a value little less than .80 (due to rounding the exact values appear larger in table) and Extraversion yielded an alpha coefficient a little larger than .90. All internal consistency coefficients attest moderate to high reliability of the instrument (Iacobucci & Duhachek, 2003). Cross-cultural comparisons, though not having a representative randomized sample, showed notable differences regarding Agreeableness and Extraversion, which could prove that constructing national norms for individual assessment is necessary. Other research reports also established region differences regarding Big Five traits around the world (see for example, Schmitt, Allik, McCrae, and Benet-Martınez, 2007)

4. General Discussion

Our study has as main limitations very low (study 1) and low (study 2) samples (especially regarding Romanian participants), which lack statistical power and perhaps some normally detectable significant relationships were missed. Also, we have not asses the motivation for accurateness of completing of the questionnaire of adolescents which could bias the results of study 1 and study 2 used on line testing which could pose serious problems regarding research biases. Including data with missing data on demographic variable in study 2 could have also biased the results, but in our opinion, the small number of participants with missing data as well as no missing data of the questionnaire items coupled with acceptable to good internal consistency, participants with missing data included could not had a large impact on cross-cultural comparisons. Nonetheless the national samples used in study 2 for cross-cultural comparisons are far from being representative of countries cultural specifics analyzes and the participants were not randomly chosen and then we cannot easily generalize the results obtained. Also on-line administration of the questionnaires could result in biased data but this could not be always necessary true (see Gosling, Srivastava & John, 2004, for a detailed discussion). Though, we regard the results of the studies rather preliminary, the overall results showed Romanian IPIP-50 as valid instrument with linguistic equivalence with the original IPIP-50 and partially temporally stable. The study 2 further replicated to a large degree some of the Rusu et al. (2012) findings, which together with this validation research qualifies Romanian IPIP-50 as an instrument of choice for personality assessment in psychological research and practice. Based on our results, we strongly recommend further assessing the temporal stability of the instrument in larger and more heterogeneous samples, as well as encourage research with Romanian IPIP-50 in various fields of psychology, since international research found many uses of BFM for psychological statistical diagnostic procedures.

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