PSYCHOMETRIC PROPERTIES OF THE GEORGIAN VERSIONS OF THE BIG FIVE QUESTIONNAIRES

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Abstract

The goal of the study is to examine the psychometric properties of the Georgian versions of the Big Five Inventory (BFI; John & Strivastava, 1999) and the Ten Item Personality Inventory (TIPI; Gosling, Rentfrow, & Swann, 2003), the two instruments measuring the Big Five model. 866 individuals participated in the study examining the Georgian version of BFI and 377 individuals in the development of the Georgian version of TIPI. According to the results, the factor structure of both instruments replicates the five-factor model observed in other cultures. The reliability coefficients correspond to the minimum levels recommended for personality questionnaires/inventories. However, these levels turned out to be lower for TIPI. The instrument validity is proved by their logical correlations with the theoretically relevant constructs, namely with the Six-Factor model, aversive personality traits, and emotional intelligence. We can conclude that due to the factor structure, expected relationships with other constructs and statistical significance, the Georgian versions of both instruments measuring the Big Five can be used for future research.

Key words: Big Five model of personality, BFI, TIPI, Psychometrics

Introduction

Personality is a multidimensional construct examined from the perspective of different personality theories. The Big Five model was developed to study its versatile nature and comprises five culturally universal personality traits: Extraversion, Neuroticism, Agreeableness, Conscientiousness and Openness to Experience. In addition, each of these traits has six facets (Goldberg, 1993; John & Srivastava, 1999). The development of questionnaires/inventories to study the five personality traits started in the 1980s (Costa & McCrae, 1992). Today we have several versions of Big Five questionnaires as well as the versions adapted for different languages (e.g. Leung, Wong, Chan, & Lam, 2013; Ubbiali, Chiorri, Hampton, & Donati, 2013). The first revised version (NEO

PI-R) includes 240 items and, as opposed to the original version, makes it possible to count the scores on the agreeableness and conscientiousness dimensions along with the dimensions of Neuroticism, Extraversion and Openness to Experience (Costa & MacCrey, 1992). Later, the 60-items version was developed to assess the five-factor model (NEO-FFI; Costa & MacCrey, 1992). This was followed by versions including 44 (John & Strivastava, 1999), 30, 15, 10 and 5 items (Gosling, Rentfrow, & Swann, 2003; Soto & John, 2017). The development of the short versions of the questionnaires/inventories measuring the five traits is obviously of great practical importance. They enable researchers to obtain maximum information about research participants in a short period of time. However, it has to be noted that a smaller number of items in the questionnaire decreases the probability of obtaining comprehensive information on all the six facets of a personality trait.

The universal character of the five personality traits is confirmed by their existence in different countries. In addition, the analysis of studies conducted in 55 countries shows that there are significant gender differences across the Big Five personality traits; in particular, women score higher on the Agreeableness, Extraversion, Neuroticism and Conscientiousness scales. This difference becomes even more salient with economic well-being, accessibility of education and the increased opportunity to lead a long and healthy life (Schmitt, Realo, Voracek, & Allik, 2008). Despite the fact that the intensity of gender differences changes under cultural influences, the differences between men and women across the Big Five personality traits are obvious and are observed in most countries.

The Big Five and the Six-Factor Model

According to the lexical hypothesis, individual differences are reflected in the adjectives used in everyday language. After filtering the adjectives and subjecting them to factor analysis, five personality traits were identified (Goldberg, 1990; Norman, 1963). Later analysis and the revision of adjectives in different languages showed that there are six, rather than five basic factors: Honesty–Humility, Emotionality (versus neuroticism), Agreeableness (versus anger), Extraversion, Conscientiousness and Openness to Experience. The universal character of these factors is confirmed in the studies examining over 10 languages (Lee & Ashton, 2008). Each trait in the Big Six comprises four facets. The instrument measuring these traits is based on the information obtained through self-reports and others' assessments. As a rule, the data obtained from the above two sources are interrelated (Ashton & Lee, 2009). The study conducted by Ashton and Lee (2009) shows that some of the Big Six traits (Extraversion, Conscientiousness and Openness to Experience) relate to the corresponding traits in the Big Five model. Extraversion in the Big Six model negatively correlates with Neuroticism in the Big Five model, and the latter positively correlates with Emotionality in the Big Six model. As for Honesty – Humility, it shows positive correlation only with Agreeableness in the Big Five model.

The Big Five and the Dark Triad

Personality studies are not limited to universal and, relatively, neutral personality characteristics. Interest in socially aversive personalities intensified at the beginning of the 21st century. According to Paulhus and Williams (2002), Narcissism, Machiavellianism and Psychopathy form the

constellation of the 'Dark Triad'. People with narcissistic personality believe that they are superior to others. Such people are manipulative and are characterized by grandiosity. Narcissism positively correlates with Extraversion and Openness to Experience and negatively correlates with Agreeableness (Paulhus & Williams, 2002).

Machiavellianism is characterized by poorly developed conventional moral principles and weak emotionality which helps the individual to use and justify any means used for his/her own purposes (Christie & Geis, 1970). People with this trait score low on Agreeableness and Conscientiousness and high on Neuroticism (O'Boyle, Forsyth, Banks, Story, & White, 2014; Paulhus & Williams, 2002). Psychopathy is manifested in antisocial behavior and criminal tendencies (Neumann, Hare, & Parlini, 2015). People with the psychopathic trait score low on Consciousness and Agreeableness and high on Extraversion and Openness to Experience (O'Boyle et al., 2014; Paulhus & Williams, 2002).

The meta-analysis of the studies concerning the relationship between the Big Five and the Dark Triad (O'Boyle et al., 2014) shows that the Big Five traits explain 30-63% of the variance of socially aversive personality traits. Agreeableness is an especially significant predictor. Individual facets of the five basic traits can explain 88% of the variance of psychopathy scores and 42% of the variance of narcissism scores. Similar results confirm the existence of the Big Five traits as universal dispositions.

The Big Five and Emotional Intelligence

As a trait, emotional intelligence lies at the lower levels of personality hierarchies and is manifested in the ability to understand one's own and other people's emotions and influence the way other people feel (Petrides & Furnham, 2003). Emotional intelligence comprises fifteen facets united around the four factors: Emotionality, Sociability, Self-Control and Well-being (Petrides, 2009). People rating high on the Well-Being factor are self-confident and tend to experience positive emotions (Baudry, Grynberg, Dassonneville, Lelorain, & Christophe, 2018; Petrides, Pita, & Kokkinaki, 2007; Petrides, 2009). Individuals scoring high on Self-Control demonstrate the ability to control their own emotions, which helps them effectively cope with stressful situations (Baudry et al., 2018; Petrides et al., 2007). Emotionality helps people understand one's own and other people's emotions. It is manifested in empathy and enables the person with this personality trait to use emotions for effective communication and establishing close relationships (Baudry et al., 2018; Petrides et al., 2007). Sociability is manifested in controlling one's own emotions and their effective use for establishing social contacts. Individuals with the above trait establish sincere and authentic communication with the people in their environment and influence their emotions (Baudry et al., 2018; Petrides et al., 2007). Critics of emotional intelligence consider it as a combination of different personality dimensions, such as emotional stability and intelligence (Eysenck, 1998). However, meta-analytical studies show that emotional intelligence is more than a specific combination of basic personality traits (Andrei, Siegling, Aloe, Baldaro, & Petrides, 2015). Emotional intelligence and its individual facets negatively correlate with Neuroticism, but show positive and statistically significant correlations with the rest of the Big Five personality traits (Greven, Chamorro-Premuzic, Arteche, & Furnham, 2008; Mikolajczak, Luminet, Leroy, & Roy, 2007; Petrides, Vernon, Schermer, Ligthart, Boomsma, & Veselka, 2010).

The current study

Even though Big Five questionnaires are successfully used in personality studies and the psychological studies on individual differences, information on the psychometric properties of the Georgian versions is quite scarce. For this reason, the present research aims at examining the psychometric properties of two different instruments: The Big Five Inventory (BFI; John & Strivastava, 1999) used to assess the Big Five dimensions and the Ten-Item Personality Inventory (TIPI; Gosling, Rentfrow, & Swann, 2003).

The development of both instruments was identical and comprised the following stages: (1) At the first stages two independent translations for each instrument were prepared; (2) After comparing the translated versions, the final version was agreed upon and the first working versions were prepared; (3) The content correspondence between the translated and the English versions was determined; (4) Experts assessed the content validity of the working version of the questionnaires. For this purpose, they had to assess which trait, in their opinion, was measured by which item. Three experts worked on the Big Five Inventory (BFI) and five on the Ten-Item Personality Inventory (TIPI). The items with inconsistent assessments underwent revision; (5) Scale reliability was determined using the pilot study results (40 participants for BFI and 30 participants for TIPI). The items decreasing the scale reliability were assessed for the second time and revised - 2 items were revised in BFI and three in TIPI inventories.

The given study consists of two independent parts. Each of them serves the examination of psychometric properties of each instrument.

Study 1

The objective of Study 1 was to examine the psychometric properties of the instrument assessing the Big Five Inventory (BFI; John & Strivastava, 1999), in particular, to determine the factor structure, internal consistency and validity.

Research method

Participants and procedure

866 individuals participated in the study, out of whom 550 were women and 303 men (13 participants did not indicate their gender). The participants' age ranged from 17 to 69 (M_{age}=25.65, SD=10.47). The research participants' majority (51.3%) was composed of students; out of the rest of the participants 36.2% was with higher education, 6% - secondary education and 6.5% - college/vocational education.

Participation in the study was voluntary and the participants did not receive any compensation or reimbursement. The questionnaires were administered individually or in small groups. The standard instruction for the completion of the questionnaire was provided at the beginning of the questionnaire. When needed, oral instructions were also provided. The research participants were asked to express the extent of their agreement/disagreement with the questionnaire items by indicating the corresponding number along the item.

Research instruments

The five-factor model. The instrument measuring the Big Five (The Big Five Inventory (BFI); John & Strivastava, 1999) contains 44 items. The items are evaluated using a five-point Likert scale, with point 1 indicating '*Strongly disagree*' and point 5 - '*Strongly agree*'. The questionnaire measures five personality traits: Openness to Experience (10 items), Extraversion (8 items), Agreeableness (9 items), Conscientiousness (9 items) and Neuroticism (8 items).

The Dark Triad. The Dark Triad was measured with Dark Triad of Personality (D3-Short) (Paulhus, 2013). The questionnaire contains 27 items that are evaluated using a five-point Likert scale with point 1 indicating '*Strongly disagree*' and point 5 - '*Strongly agree'*. 9 items measure Machiavellianism ('Whatever it takes, you must get the important people on your side.'); 9 items - Narcissism ('People see me as a natural leader.') and 9 items – psychopathy ('People often say I'm out of control').

Emotional intelligence. Emotional intelligence was assessed using the short form of the Georgian version of the Trait Emotional Intelligence Questionnaire (Petrides, 2009). The short form of the Georgian version was based on the extended Georgian version (Martskvishvili, Arutinovi, & Mestvirishvili, 2013). Similar to the original version of the questionnaire, the Georgian version contains 30 items evaluated on a seven-point Likert scale (1- '*Strongly disagree'*, 7- '*Strongly agree*'). It measures the four emotional intelligence factors (Emotionality, Sociability, Well-Being and Self-Control) and global emotional intelligence.

The six-factor model. To assess the six-factor model we used the short Georgian version of HEXACO-PI-R measuring the six HEXACO personality traits (Ashton, & Lee, 2009). The inventory is a self-report instrument containing 60 items, assessing 6 personality dimensions: Honesty – Humility, Conscientiousness, Agreeableness, Emotionality, Extraversion, and Openness to Experience.

Data analysis

At the first stage the Principal Component Analysis method was used to determine the factor structure of the Big Five instrument. Even though it is more advisable to apply Confirmatory Factor Analysis for the identification of the existing personality characteristics, the results produced by Confirmatory Factor Analysis are inconsistent in most studies. For this reason, part of researchers questions the suitability of the application of the above method to the Big Five (Borkenau & Ostendorf, 1990; McCrae, Zonderman, Costa, Bond, & Paunonen, 1996; Vassend & Skrondal, 1997). Cronbach's alpha was used as a reliability measure. It is the method measuring internal consistency. In order to determine the validity of the instrument correlations were computed between the factors measured with the BFI and theoretically relevant constructs.

Results

The descriptive statistics and reliability coefficients for all the instruments used in the study as well as the sample characteristics are presented in Table N1 (the Big Five Inventory) and in Table N2 (the rest of the instruments used in Study 1).

Table N1. Descriptive statistics measures and internal consistency for BFI

		Cronbach's α			Men		Women							
	Men/Women	N of items	Men	Women	Total	M	SD	M	SD	t	Effect size	Min	Max	Skewness	Kurtoses
Extraversion	303/550	9	.68	.69	.68	3.37	.65	3.32	.69	1.04	.07	1.38	5.00	-.204	-.121
Agreeableness	303/550	10	.60	.74	.71	3.59	.57	3.86	.67	-6.12 ***	.43	1.33	5.00	-.242	-.379
Conscientiousness	303/550	8	.73	.78	.77	3.70	.63	3.88	.70	-3.81 ***	.27	1.56	5.00	-.486	-.068
Neuroticism	303/550	8	.77	.77	.79	2.62	.78	2.77	.83	-2.53 **	.19	1.00	4.88	.212	-.511
Openness to Experience	303/550	9	.75	.75	.75	3.87	.60	3.72	.66	3.26***	.24	1.40	5.00	-.596	.549

Note: ***$p< .001$; **$p< .01$.

Table N2. Descriptive statistics, internal consistency and correlations

		α			Age		Women/ Men (%)	Extraversion	Agreeableness	Conscien- tiousness	Neuroticism	Openness to experience
	N of items	α	M	SD	M	SD						
Dark Triad												
Machiavellianism	130	.62	2.71	.54	21.60	4.52	35/65	.17	-.23**	.15	-.09	-.01
Narcissism	130	.70	2.84	.61	21.60	4.52	35/65	.42**	-.25**	.10	.03	.38**
Psychopathy	130	.78	2.17	.68	21.60	4.52	35/65	.16	-.33**	.02	.16	.20*
Composite	130	.83	2.57	.48	21.60	4.52	35/65	.32**	-.35**	.11	.05	.26**
Emotional intelligence												
Global	139	.73	5.07	.59	41.05	12.33	94/6	.51**	.29**	.45**	-.51**	.42**
Six-Factor Model												
Honesty-Humility	95	.84	3.81	.64	18.74	1.31	82/18	-.25*	.33**	.19	-.10	-.05
Emotionallity	95	.83	3.31	.66	18.74	1.31	82/18	.04	.27**	-.02	.39**	-.08
Extraversion	95	.89	3.08	.78	18.74	1.31	82/18	.89**	.20	.47**	-.49**	.35**
Agreeableness	95	.76	2.86	.56	18.74	1.31	82/18	-.11	.51**	.27**	-.46**	-.01
Conscientiousness	95	.85	3.65	.62	18.74	1.31	82/18	.22*	.43**	.87**	-.38**	.15
Openness to Experience	95	.77	3.82	.53	18.74	1.31	82/18	-.04	.02	.14	-.20	.64**

Notes. *** $p < .001$**, $p < .01$, *$p <.05$.

Factor analysis. The BFI items were subjected to principal component analysis (PCA). Prior to performing PCA, the suitability of data for factor analysis was assessed. Kaiser-Meyer-Olkin (Kaiser, 1970, 1974) value (.85) exceeded the recommended value of .6 and the Bartlett test ($p<.001$) (Bartlett, 1954) reached statistical significance, which confirms the suitability of the data for the factor analysis.

The principal component factor analysis with Varimax rotation revealed the presence of 9 components with the eigenvalue exceeding 1, explaining 14.3%, 9.5% 7.3%, 5.5%, 4.9% 3.5%, 2.9%, 2.7% 2.4% of the variance respectively. The scree plot showed a sharp change after the fifth component. Based on Cattell's (1966) scree test, 5 principal components were retained for further analysis. The existence of those components was also confirmed by the parallel factor analysis which extracted only 5 components with eigenvalues exceeding the corresponding criterion values for a randomly generated data matrix of the same size (44 variables * 867 participants). The five-component solution explained a total of 41.52% of the variance. The eigenvalues for the first 5 factors were 14.25, 9.45, 7.29, 5.53 and 4.99. All the items were represented in the factor space with the communality 0.41.

The list of items corresponding to each factor is presented in Table N3. Several items loaded on more than one factor. For example, items 26 and 16 had been developed to measure the Extraversion factor (corresponding loading - .169 and .282), but both items loaded higher on the Conscientiousness factor (.593 and .439). Also, item 35 which had been developed to measure Openness to experience (.250) loaded higher on Extraversion (.370). It has to be emphasized that each of these items also loaded on the factors it was meant to measure. However, item 2, which had been developed to measure Agreeableness, loaded very low on the given factor. Items 15 and 11 loaded on more than one factor, but they loaded higher on the factors (Openness to Experience and Extraversion) they were meant to measure.

Table N3. *The factor structure for BFI*

	Conscientiousness	Neuroticism	Openness to experience	Agreeableness	Extraversion
Item 28	.716				
Item 3	.711				
Item 33	.708				
Item 23	.627				
Item 26	.593				.169
Item 18	.558				
Item 38	.478				
Item 8	.467				
Item 16	.439		.348		.282
Item 43	.384				

Item 39		.744		
Item 19		.695		
Item 24		.622		
Item 14		.599		
Item 9		.563		
Item 34		.556		
Item 4		.504		
Item 29		.492		
Item 20			.674	
Item 30			.655	
Item 25			.633	
Item 5			.614	
Item 40			.598	
Item 44			.581	
Item 41			.547	
Item 15	.395		.489	
Item 10			.295	
Item 2				.129
Item 17				.690
Item 32				.638
Item 27				.625
Item 22				.606
Item 12				.594
Item 7				.488
Item 42				.458
Item 37				.457
Item 13				.408
Item 36					.566
Item 6					.564
Item 31					.563
Item 21					.561
Item 1					.518

|			
Item 11	.426		.517
Item 35		.251	.370

Factor extraction method: Principal Component Analysis

Rotation method: Varimax with Kaiser normalization

Rotation number – 7

Loadings below |.30| have been suppressed

Score distribution. Table N1 shows minimum and maximum scores, mean and standard deviation, skewness and kurtosis for BFI. Kolmogorov – Smirnov (KS) test showed that in the Big Five Inventory the frequencies of the factor scores were not normally distributed (See Figure N1), in particular, Extraversion KS (866) =.06, *p*<.05; Agreeableness KS (866) =.06, *p*<.05; Conscientiousness KS (866) =.06, *p*<.05; Neuroticism KS (866) =.06, *p*<.05 and Openness to Experience KS (866) =.05, *p*<.05. The factor score distribution is presented in Figure N1.

Figure N1. *Factor score distribution for the Big Five*
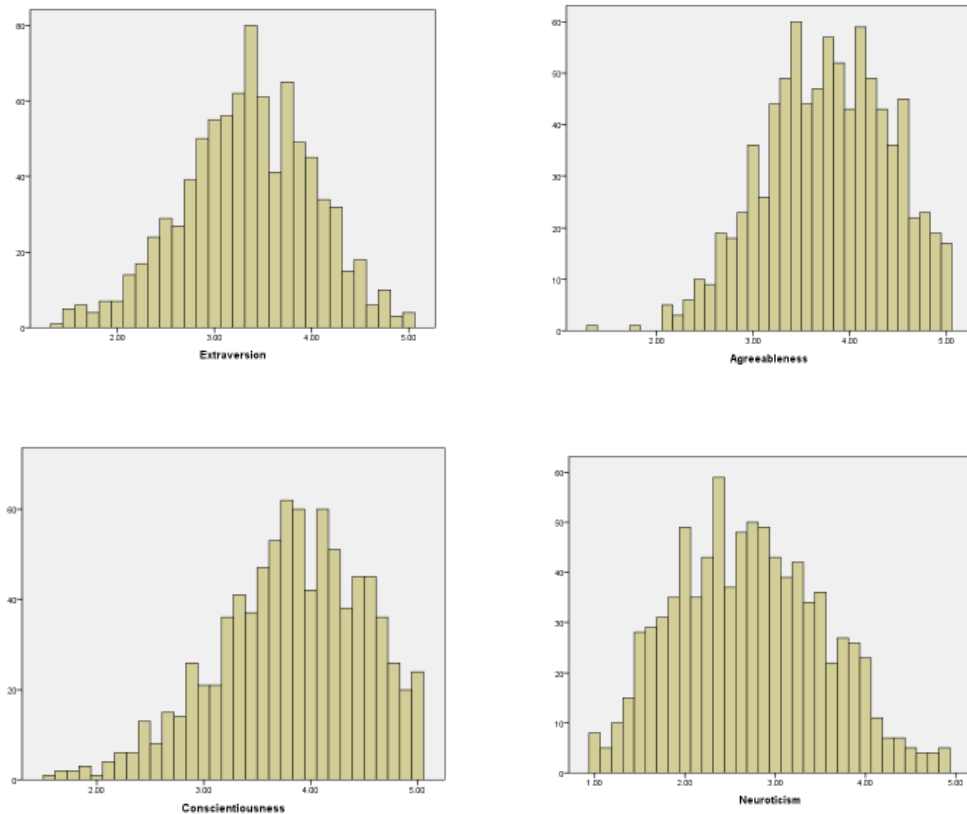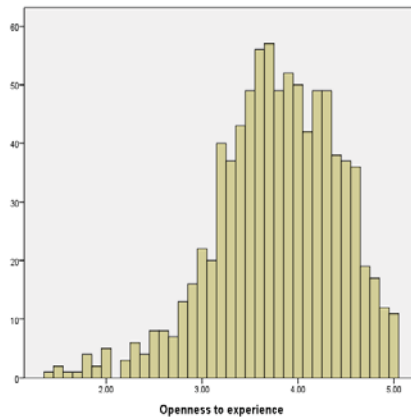
Openness to experience

Reliability. The reliability of each factor was assessed to determine the internal consistency of the questionnaire. Reliability was measured using Cronbach's alpha. Reliability coefficients varied from .68 to .79 with the lowest coefficient for Extraversion and the highest for Neuroticism.

Gender differences. The independent sample *t* - test was used to assess gender differences. The difference was statistically significant for all the factors except Extraversion. As for the other factors, women scored higher on Agreeableness, Conscientiousness, and Neuroticism, whereas men scored higher on Openness to Experience (See Table N1).

Construct validity. Correlations between the Big Five factors and theoretically relevant variables are presented in Table N2. All the Big Five factors were related as hypothesized to the factors measured by the research instruments. In particular, Narcissism positively correlated with Extraversion; Openness to Experience is negatively correlated with Agreeableness; Agreeableness negatively correlated with Machiavellianism and Psychopathy and Psychopathy positively correlated with Openness to Experience. Emotional intelligence is negatively correlated with Neuroticism, but its correlation with the other traits of the Big Five was positive and statistically significant. As for the correlation with the same constructs measured with the Six-Factor model, correlations turned out to be positive, statistically significant and varied between .39 and .89. The weakest correlation observed between Emotionality and Neuroticism (.39) was still statistically significant. The strongest correlation was observed between the Extraversion factors.

Study 2

The objective of Study 2 was to examine the psychometric properties of the Ten-Item Personality Inventory (TIPI), (Gosling, Rentfrow, & Swann, 2003); in particular, to determine the structure of factors, internal consistency and validity.

Research method

Participants and procedure

377 individuals participated in the study, out of whom 168 were women and 169 men. The participants' age varied from 16 to 58 (M_{age}=20.58, SD=5.30). The majority of the research participants (66.2%) was comprised of students; 30.0% was with higher education, 2.7% - secondary, and 1.2% - college/professional education.

Participation in the study was voluntary and the participants did not receive any compensation or reimbursement. Questionnaires were administered individually or in small groups. The standard instruction for the completion of the questionnaire was provided at the beginning of the questionnaire. The research participants were asked to express the extent of their agreement/disagreement with the questionnaire items by indicating the corresponding number along the item.

Research instruments

Ten Item Personality Inventory (TIPI) (Gosling, Rentfrow, & Swann, 2003) comprises 10 items which are evaluated using a five-point Likert scale with point 1 indicating 'Strongly disagree' and point 5 - 'Strongly agree'. The questionnaire measures five personality traits: Openness to experience, Extraversion, Agreeableness, Conscientiousness and Neuroticism. All factors are measured with two items.

The five-factor model. To measure the Big-five factors we used The Big Five Inventory (BFI; John & Strivastava, 1999) used in Study 1.

The six - factor personality model. To assess the six-factor model we used the extended version of HEXACO-PI-R (Ashton, & Lee, 2009). The inventory is a self-report instrument containing 100 items and assessing 6 personality dimensions: Honesty – Humility, Conscientiousness, Agreeableness, Emotionality, Extraversion, and Openness to Experience. Each trait comprises four facets measured with 4 items. The instrument also contains an interstitial facet.

Data analysis

The Principal Component Analysis was used to determine the factor structure of the TIPI. Cronbach's alpha was used as a reliability measure. In order to determine the validity of the instrument the correlations were computed between the scores obtained with TIPI and the scores of the Six factors.

Results

The descriptive statistics and reliability of the instruments as well as the sample characteristics are presented in Table N4 (for TIPI) and in Table N5 (for the rest of the instruments used in Study 2).

Table N4. *Descriptive statistics measures and internal consistency for TIPI*

	Men/Women	N of items	Cronbach's α			Men		Women		t	Effect size	Min	Max	Skewness	Kurtoses
			Men	Women	Total	M	SD	M	SD						
Extraversion	168/169	2	.72	.79	.76	8.74	3.24	8.50	3.57	0.63	.07	2.00	14.00	-.230	-.965
Agreeableness	168/169	2	.47	.62	.56	9.26	3.16	8.76	3.11	1.14	.16	2.00	14.00	-.292	-.709
Conscientiousness	168/169	2	.65	.66	.65	10.83	2.63	11.16	2.58	-1.16	.12	2.00	14.00	-.997	.678
Neuroticism	168/169	2	.72	.66	.69	10.65	2.43	11.80	2.13	-4.65 ***	.50	2.00	14.00	-.970	.959
Openness to Experience	168/169	2	.55	.56	.55	9.16	2.25	9.62	2.80	1.66	.18	2.00	14.00	-.087	-.427

*Note: ***p< .001;*

Table N5. *Descriptive statistics, internal consistency and correlations*

	N	α	M	SD	Age		Women/Men (%)	Extraversion	Neurotychism	Conscientiousness	Agreeableness	Openness to experience
		α	M	SD	M	SD						
BFI												
Extraversion	95	.86	2.92	.87	18.74	1.31	82/18	.85**	.17	.40*	.09	.35**
Agreeableness	95	.74	3.75	.60	18.74	1.31	82/18	.19	.20	.27**	.50**	-.21*
Conscientiousness	95	.87	3.78	.71	18.74	1.31	82/18	.36**	.32**	.75**	.50**	-.04
Neuroticism	95	.87	2.85	.91	18.74	1.31	82/18	-.39**	-.85**	-.40**	-.20*	-.02
Openness to Experience	95	.82	3.90	.62	18.74	1.31	82/18	.26*	-.01	.08	.08	.51**
Six-Factor Model												
Honesty-Humility	95	.84	3.81	.64	18.74	1.31	82/18	-.18	-.10	.15	.27**	-.18
Emotionality	95	.83	3.31	.66	18.74	1.31	82/18	.11	.39**	-.04	.18	-.18
Extraversion	95	.89	3.08	.78	18.74	1.31	82/18	.83**	-.28**	.34**	.17	.29**
Agreeableness	95	.76	2.86	.56	18.74	1.31	82/18	-.13	-.48**	.18	.26*	-.16
Conscientiousness	95	.85	3.65	.62	18.74	1.31	82/18	.22*	-.35**	.71**	.47**	-.13
Openness to Experience	95	.77	3.82	.53	18.74	1.31	82/18	-.07	-.22*	.03	.14	.32**

*Note: **, p < .01, *p <.05.*

Factor analysis. The TIPI ten items were subjected to principal component analysis (PCA). Prior to performing PCA, the suitability of data for factor analysis was assessed. Kaiser-Meyer-Olkin (Kaiser, 1970, 1974) value (.59) exceeded the recommended value of .6 and the Bartlett test ($p<.001$) (Bartlett, 1954) reached statistical significance, which confirms the suitability of the data for the factor analysis.

The principal component factor analysis with Varimax rotation revealed the presence of 5 components with the eigenvalue exceeding 1, explaining 24.83%, 19.26%, 12.38% and 11.29% of the variance respectively. The scree plot showed a sharp change after the fifth component. Based on Cattell's (1966) scree test, 5 principal components were retained for further analysis. The existence of those components was also confirmed by the parallel factor analysis which extracted only 5 components with eigenvalues exceeding the corresponding criterion values for a randomly generated data matrix of the same size (10 variables * 337 participants). The five-component solution explained a total of 41.52% of the variance. The eigenvalues for the first 5 factors were 24.38, 19.26, 12.38, 11.29, 9.83.

The list of items corresponding to each factor is presented in Table N6. The factor analysis produced quite a clear structure. All the items measure the factor they are intended to measure. Only the fifth question that loads on Openness to Experience, also loads (but to a small extent) on Extraversion.

Table N6. *The factor structure for TIPI*

	Extraversion	Neuroticism	Conscientiousness	Agreeableness	Openness to Experience
item_6	.906				
item _1	.836				
item _4		.864			
item _9		.850			
item _3			.860		
item _8			.845		
item _7				.832	
item _2				.805	
item _10					.861
item _5	.372				.709

Factor extraction method: Principal Component Analysis

Rotation method: Varimax with Kaiser normalization

Rotation number - 5

Loadings below |.30| have been suppressed.

Score distribution. Table N4 shows minimum and maximum scores, average and standard deviation, skewness and kurtosis for the TIPI. Kolmogorov – Smirnov (KS) test showed that in TIPI the frequencies of the factor scores were not normally distributed, in particular, Extraversion KS (377) =.10, $p<.01$; Agreeableness KS (377) =.09, $p<.01$; Conscientiousness KS (377) =.15, $p<.01$; Neuroticism KS (377) =.15, $p<.01$ and Openness to Experience KS (377) =.10, $p<.05$.

Reliability. The reliability of each factor was assessed to determine the internal consistency of the questionnaire. Reliability was measured using Cronbach's alpha. Reliability coefficients varied from .47 to .72, with the lowest coefficient for Agreeableness and the highest for Neuroticism and Extraversion.

Gender differences by Big Five factors. The independent sample t - test was used to assess gender differences. The difference was statistically significant only for Agreeableness, on which women scored higher than men. The difference was not statistically significant for any other factors (See Table N4).

Validity. Correlations between the factors measured by TIPI and the factors measured by the instrument assessing the six-factor model and the Big Five are presented in Table N5. Similar constructs measured by different instruments positively correlated with each other. The correlations were statistically significant. Correlations were stronger with the factors measured by BFI than with the factors measured by the Six-Factor Model.

Discussion

The Georgian version of both questionnaires (The Big Five Inventory and the Ten Item Personality Inventory) replicate the five-factor structure of the English versions. The factor analysis of the Big Five Inventory (BFI) shows that most items (with a small exception) load on the factor they are meant to measure. As for the Ten Item Personality Inventory (TIPI), it also shows a clear five-factor structure. Only one item (Item 5) loads on two different factors, but to a much lesser extent compared to the factor it is supposed to measure. This can be explained by the tendency also observed during the calculation of correlations with other factors and confirms the non-existence of orthogonal relationship between the Big Five personality traits (De Young, Peterson, & Higgins, 2002).

The factor score distributions for BFI and TIPI are not normal, which can be explained by age variance (the research participants' age ranged from 17 to 55, but age groups were not evenly distributed) and, in the case of TIPI, by a small number of research participants. However, due to a small number of items, the sample size in Study 2 is big enough to carry out the factor analysis.

The internal consistency levels of the Georgian versions of BFI and TIPI mostly approximate or meet the reliability level of .70 recommended for personality inventories/questionnaires (Nunnally, 1978). However, reliabilities are definitely lower in the case of TIPI, which can be explained by a small number of items in this instrument (2 items per factor). It has to be noted that if the number of items is below 10, the reliability level may be less than 0.5. Even though short questionnaires have many advantages (they are easy to administer, are less time-consuming, etc.), we should not overlook the reliability-related imperfections.

A classical work on gender differences (Maccoby & Jacklin, 1975) states that men are more assertive, aggressive and emotionally stable than women. In our study women score higher on Conscientiousness, Neuroticism and Agreeableness, which agrees with the results of the cross-cultural study (Schmitt et al., 2008) covering 55 different countries. However, according to that study, women score higher on Extraversion than men, whereas our study did not show statistically significant gender difference on the extraversion dimension. The results of our study are also consistent with the findings of another study (Chapman, Duberstein, Sorensen & Lyness, 2007), according to which Neuroticism and Agreeableness are the personality traits more typical of women than men. As for Openness to Experience, the findings are inconsistent and vary across cultures. Likewise, inconsistencies can be explained by the fact that women score high on Openness to Emotions, whereas men score high on Openness to Ideas (Costa, Terracciano, & McCrae, 2001; McCrae & Terracciano, 2005), but Openness to Experience does not differentiate between these two forms.

The Big Five factors measured by both instruments predictably correlate with the variables measured with the instruments used in the study. The results of our study correspond to the existing findings: Narcissism positively correlates with Extraversion and Openness to Experience and negatively correlates with Agreeableness (O'Boyle et al., 2014; Paulhus & Williams, 2002). Also, individuals scoring high on Machiavellianism score low on Agreeableness (Kessler, Bandelli, Spector, Borman, Nelson, & Penney, 2010; Lee & Ashton, 2005; O'Boyle et al., 2014; Paulhus & Williams, 2002). As for the relationship between Psychopathy and the Big Five, our findings support the results of the studies according to which Psychopathy is negatively related to Agreeableness and positively correlates with Openness to Experience (O'Boyle et al., 2014; Paulhus & Williams, 2002).

The results of our study confirm that emotional intelligence and its facets are negatively related to Neuroticism, but the relationship between emotional intelligence and the other Big Five traits is positive and statistically significant (Greven et al., 2008; Mikolajczak et al., 2007; Petrides et al., 2010).

As for the relationship between the Big Five factors and the traits in the Six-Factor model measured with both instruments, the correlations are positive, strong and statistically significant, which corresponds to the results of other studies, i.e. the Big Six traits like Extraversion, Conscientiousness and Openness to Experience are related to the corresponding traits in the Big Five model. Extraversion in the Big Six model negatively correlates with Neuroticism in the Big Five and the latter trait positively correlates with Emotionality in the Big Six. Honesty – Humility shows positive correlation with the Agreeableness in the Big Five (Ashton & Lee, 2009). In some cases, the correlation is not strong enough (e.g. the correlation between Emotionality in the Six-Factor model and Neuroticism in the Big Five model), which can be explained by the difference in the facets of the factors measured by these two models.

Conclusion

The results of our study show that the Georgian translations of the Big Five Inventory and the Ten Item Personality Inventory replicate the properties and tendencies of the corresponding non-Georgian versions. The results related to gender differences are similar to those that are obtained through the administration of the Big Five inventories in different countries. These results

can be also theoretically justified. The significance coefficients correspond to the minimum levels recommended for personality questionnaires/inventories. Certain flaws observed in the case of TIPI can be explained by an extremely small number of items. Both instruments used in the study are valid, which is proved by their hypothesized relationship with the theoretically assumed constructs as well as the constructs measured by other instruments. No norms have been assessed for any of the questionnaires within the framework of the given study, which makes it impossible to use these instruments for individual assessment and/or consulting. However, it is possible to use the current versions of the questionnaires for research purposes.

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