

**Trabajo final de grado**  
Licenciatura en Psicología  
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**Assessment of personality through Five Factor Model: reliability  
and convergent validity of the BFI-2 and TIPI**

Estudiante: Andrés Oliveri Cuneo C.I. 4.690.987-0

Tutor: Dr. Alejandro Vásquez

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### *Abstract*

Five factor model of personality is one of the most robust and used model in clinical and psychological research. Depending on the conditions of evaluation different measures can be chosen. The BFI-2 is a new questionnaire of sixty items that evaluates not only the five personality traits but also the facets of each trait. TIPI is a ten-item questionnaire that evaluates the five traits in an economic way. This research studies the reliability and validity of the adaptation to Rio de la Plata Spanish of both instruments in university students of Psychology and Biology careers of Uruguay. Internal consistency, convergent, internal, convergent and test-retest correlations were analyzed. The results indicate that both questionnaires have good reliability and convergent validity properties, and they can be used for research or in clinical context. Nevertheless, depending on the situation it is recommended to use BFI-2 to obtain deeper information and TIPI in case there are no enough resources to investigate the model in deep.

### *Resumen*

El modelo de los cinco grandes de personalidad es uno de los más robustos y utilizados en investigación y en psicología clínica. Dependiendo de las condiciones de evaluación, diferentes medidas pueden ser escogidas. El BFI-2 es un nuevo cuestionario de sesenta ítems que evalúa no solo los cinco rasgos de personalidad sino también las facetas de cada rasgo. El TIPI es un cuestionario de diez ítems que evalúa los cinco rasgos de manera económica. Esta investigación estudia la confiabilidad y validez de la adaptación al español de Río de la Plata de ambas medidas en estudiantes universitarios de Psicología y Biología de Uruguay. La consistencia interna, correlaciones internas, convergentes y de test retest fueron calculadas. Los resultados indican que ambos cuestionarios presentan buena confiabilidad y validez convergente, y pueden ser utilizados para investigación o en contexto clínico. No obstante, dependiendo de la situación se recomienda utilizar el BFI-2 para obtener información más profunda y el TIPI en caso de que no se tengan recursos suficientes para investigar el modelo en profundidad.

*Keywords:* big five, personality, reliability

## 1. INTRODUCTION

Personality is defined as the “relatively enduring styles of thinking, feeling and acting that characterize an individual” (Costa, McCrae & Kay, 1995, pp.124) and is an interindividual variable that determines patterns of our behaviour in different areas. McCrae & Costa (2008) following a large tradition of studies in personality (Cattell, 1943; Eysenck, 1991) proposed the existence of five personality factors, that conform the five factor model (FFM), a lexical model of personality, being one of the most robust and widely used in clinical context and in psychological research. These factors prevail in the human being, keep stable on the lifespan and are theoretically consistent despite of age (Elkins, Kassenboehmer & Schurer, 2017), language and cultural differences (McCrae & Costa, 1997). These traits are: neuroticism that has been described as the presence of negative emotional feelings in people, such as anxiety, sadness, worry, as a counterpart of emotional stability; agreeableness, that involves prosocial orientation and behaviours; extraversion, that comprehend an energy towards social and material world; conscientiousness, which implies the socially prescribed impulse control, planning, organizing, and prioritization of task, and finally open mindedness, which refers to the individual’s mental and experiential life (John, Naumann & Soto, 2008; John & Srivastava, 1999). Many studies show how these personality traits are related with other psychological constructs. For instance, conscientiousness has been studied with variables such as academic effort and achievement (Trautwein, Ludtke, Roberts, Schnyder & Niggli, 2009), future time orientation (Gick, 2014), health-related behaviors and longevity (Bogg & Roberts, 2004), morningness (Randler, 2008); neuroticism with internalizing problems (Smith, Barstead & Rubin, 2017), eveningness preference (Randler, 2008); open mindedness with crystallized intelligence (Schrelten, van der Hulst, Pearlson & Gordon, 2010) and creative thinking (Shi, Dai & Lu, 2016); extroversion with friending on social networks (Chen, 2014), and agreeableness with resilience (Shi, Liu, Wang & Wang, 2015) and conflict

resolution (Jensen-Campbell, Gleason, Adams & Malcolm, 2003). For the measurement of the five factors, different instruments have been created, such as the NEO-PI (Costa & McCrae, 1985) or the BFI (John & Srivastava, 1999).

Recently, Soto & John (2017) proposed a new version of the BFI (the BFI-2), that consists of 60 items, with a response likert scale from 1 to 5, evaluating the five factors and also facets, that give more information of each trait. The correlation pattern of the traits are weak to moderate for all variables. Concerning reliability, test-retest has acceptable to good values in the five traits, and internal consistency was good to excellent.

Because of circumstances of assessments, like time of evaluation, facilities or other, not all researchers can afford having long form scales. Short-form scales can be a solution, despite it may come across with a reduction of psychometric properties. Gosling, Rentfrow & Swann (2003) developed the Ten-Item Personality Inventory (TIPI), a short form to use in case the researchers or participants don't have enough time to evaluate the personality traits of the FFM. In this case it has 10 items with a response likert scale from 1 to 7, because of its length, the facets are not evaluated like Soto & John's (2017). In Gosling et al. (2003) TIPI shows a test-retest reliability almost acceptable and acceptable in the five traits and shows convergent moderate to strong correlations with the Big Five Inventory (John & Srivastava, 1999). The Spanish and Catalan versions of the TIPI (Renau, Oberst, Gosling, Rusiñol & Chamarro, 2013) showed similar test-retest reliability than Gosling et al. (2003). Both versions (Renau et al. 2013) show moderate to strong convergent correlations with NEO-PI-R (Costa & McCrae, 1985).

## **1.1 This study**

The objective of this study is to present information concerning the reliability (internal consistency and stability) and convergent validity of two widely used measures of personality, the TIPI and the BFI-2 adapted to Rio de la Plata's Spanish (Uruguay and Buenos Aires region of Argentina). Despite of the popularity of both instruments in psychological research there are no studies of the reliability of these instruments in the region.

## **2. METHOD**

### **2.1 Participants and procedure**

Data was collected using four samples. Sample 1 is conformed by 227 undergraduate students (71,4% female) recruited from courses of Psychology (n=163) and Biology (n=64) careers, of age ranging from 18 to 60 years ( $M=22,95;SD=6,85$ ). Sample 2 is conformed by 164 undergraduate students (69,4% female) recruited all from courses of Psychology career, of age ranging from 18 to 42 years ( $M=23,65;SD=5,33$ ). Sample 3 is conformed by 102 undergraduate students (74,5% female) recruited from courses of Psychology (79) and Biology (23) careers, of age ranging from 18 to 60 years ( $M=25,01;M=9,04$ ). Sample 4 used for the test retest analysis, is conformed by 92 university students (68,5% female), of age ranging from 18 to 71 years ( $M=26,77;SD=9,60$ ). There were no coincident participants between the samples.

### *2.2 Measure*

All the samples completed BFI-2, TIPI, or both. Those assessments were adapted to Spanish using the translation-back translation procedure (International Test Commission, 2017) translated by two experts in English and Spanish. Disagreement in the translation of some

items were resolved through discussion groups. Translated items were tested using think-aloud technique, with 4 volunteers. Finally another discussion group was organized focusing on the inconsistencies that arose from the technique. The internal consistency coefficient of BFI-2 in the original study has the following values: for Extraversion,  $\alpha=.88$ ; for Agreeableness,  $\alpha=.82$ ; for Conscientiousness,  $\alpha=.86$ ; for Neuroticism,  $\alpha=.90$ , finally for Open Mindedness,  $\alpha=.85$ .

Sample 1 completed BFI-2, a sociodemographic questionnaire concerning age and University career, and different assessments for convergent validity purposes: *Consideration of Future Consequences scale* (CFC) (Vásquez-Echeverría, Antino, Álvarez-Núñez, Rodríguez-Muñoz, 2018) is a 14-item scale, that has 2 subscales, immediate (CFC\_I) and future (CFC\_F) that assess how the people evaluate the consequences of their behaviour, either immediate or future. In this study it is used to assess the validity of Conscientiousness trait, using Future Subscale. It is responded by a likert scale of 7 options.

*Trait anxiety scale from the State-Trait Anxiety Scale Spanish adaptation* (STAI) (Spielberger, Gorsuch & Lushene, 1986) is a 20 item-scale that evaluates trait anxiety, it is used to assess the validity of Neuroticism trait. It is responded by a likert scale of 4 options.

*Aggression-hostility subscale of the Spanish short form adaptation of Zuckerman Kuhlman Personality Questionnaire* (ZKPQ) (Aluja, Rossier, García, Angleitner, Kuhlman & Zuckerman, 2002) is a 10-item subscale of the ZKPQ, that evaluates the Aggression-hostility personality trait of Alternative Five Factor Model. It is used to assess the convergent validity, in a negative way, of Agreeableness trait. It is conformed by a dichotomic scale of response.

Finally the extraversion subscale of the Spanish version of the *Reduced Eysenck Personality Questionnaire* (REPQ) (Sandin, Valiente, Chorot, Olmedo & Santed, 2002) is a 6-item

subscale of the reduced personality questionnaire of Eysenck's Model. It is used to assess the validity of Extraversion trait. It is conformed by a dichotomic scale of response.

Sample 2 completed the TIPI, the sociodemographic questionnaire and CFC scale.

Sample 3 completed BFI-2, TIPI, the sociodemographic questionnaire, and the same assessments for external validity used in sample 2.

From sample 4, because of time constraint in assessment sessions, 7 participants completed only the TIPI, 30 participants completed only the BFI-2 and 55 participants completed both assessments.

#### **2.4 Procedure, data treatment and analysis plan**

Data was collected during classes in courses of 2017 and 2018. The software used for the analysis are SPSS v.24 and JASP v.0.8.5.1. A repeated values analysis was computed, no participants had more than 80% of the responses on the BFI, TIPI, CFC and STAI in the same score of the scale. The participants that had more than 10% of missing values in any trait in the BFI-2 were eliminated of databases. The participants that had one item or more missing values in TIPI were eliminated because of the length of the scale. For the rest of the scales, the criteria taken is that if a participant had more than 20% of missing values in a subscale, the case was eliminated. The missings values were imputed by Expectation Maximization after probing with the MCAR the randomization of the missing values in BFI-2, CFC, ZKPQ, REPQ and STAI. For the analysis of Cronbach's Alpha (Tavakol & Dennick, 2016), McDonald's Omega, Test Retest correlation the value taken as acceptable was .70 and for Intraclass correlation was .60 (Cicchetti, 1994).

### **3. RESULTS**

#### **3.1. Descriptive statistics and internal consistency**

Table 1 shows descriptive statistics and internal consistency coefficients of the BFI-2, in case of the TIPI the internal consistency coefficients (Cronbach's Alpha and McDonald's Omega) were not calculated because of the length of the subscales (2 items each trait). The BFI-2 shows acceptable to good internal consistency values ( $\alpha$  from .74 to .84;  $\omega$  from .76 to .84). , all the items of each trait contributed to Alpha and Omega, excepting item 11 of the scale, that belongs to Extroversion, and item 43 that belongs to Conscientiousness, their removal increment the coefficients in a minimal value. For TIPI a correlation of the items that conforms the traits was computed, correlations were from close to zero to moderate (from .04 to .55), specifically for Agreeableness it was close to zero. Supplementary material 2 shows the descriptive statistics of each item and the frequencies of response of lowest and highest response options of the scales. All response options of the scale were used. The items that have a response frequency of more than 50% in the highest response option are items 17 and 52 of Agreeableness, item 19 of Neuroticism, and item 43 of Conscientiousness of BFI-2.

#### **3.2 Stability of the measure in time**

Two to three weeks test retest reliability was assessed to study the stability of the measures (table 1), there was no imputation of data in the TIPI, and in case of the BFI-2 the same criteria for all the rest of the analysis was used. The correlation values obtained are between .75 and .85 for the BFI-2 traits computed and between .47 and .81 for the TIPI traits. Also Intraclass Correlations were computed, with values between .86 and .92 for BFI-2 traits .63 and .90 for the TIPI traits (Cicchetti, 1994).



Table 1.  
*Descriptive statistics and reliability coefficients of the BFI and TIPI subscales.*

|        | M (SD)      | Cronbach's $\alpha$ | McDonald's $\omega$ | r     | TRT   | ICC   |
|--------|-------------|---------------------|---------------------|-------|-------|-------|
| BFI_E  | 3,41 (0,46) | .79                 | .79                 |       | .84** | .91** |
| BFI_A  | 3,76 (0,70) | .74                 | .76                 |       | .75** | .86** |
| BFI_C  | 3,50(0,60)  | .84                 | .84                 |       | .85** | .92** |
| BFI_N  | 3,06(0,51)  | .84                 | .84                 |       | .83** | .90** |
| BFI_O  | 3,85 (0,25) | .74                 | .78                 |       | .82** | .89** |
| TIPI_E | 4,42(1,63)  |                     |                     | .55** | .81** | .90** |
| TIPI_A | 4,57(1,14)  |                     |                     | .04   | .54** | .70** |
| TIPI_C | 5,07(1,23)  |                     |                     | .16*  | .71** | .83** |
| TIPI_N | 3,92(1,53)  |                     |                     | .52** | .72** | .84** |
| TIPI_O | 5,29(1,19)  |                     |                     | .17** | .47** | .63** |

*Note.* BFI\_E=Extraversion trait of BFI-2. BFI\_A=Agreeableness trait of BFI-2. TIPI\_E=Extraversion trait of TIPI. TIPI\_O=Open Mindedness Trait of TIPI. TIPI\_C=Conscientiousness trait of TIPI. TIPI\_A=Agreeableness trait of TIPI. TIPI\_N=Neuroticism trait of TIPI. TRT=Test retest Pearson correlation coefficient. r=Correlations coefficient of items that conforms each trait. ICC=Intraclass correlation coefficient. The sample of test retest and intraclass correlation for TIPI was of n=62 and for BFI-2 was of n=92.

### 3.3 Convergent and inter correlations

Pearson's correlations were computed to assess the convergent validity of the BFI-2 and TIPI (table 2). There was no convergent validity assessment for Open Mindedness. For the rest of the traits (Extroversion, Agreeableness, Conscientiousness and Neuroticism), the correlations with their respective convergent assessment were moderate to strong, except for Conscientiousness (TIPI) with CFC\_F subscale. In the convergent validity analysis between TIPI and BFI-2 subscales, values were all moderate to strong. Internal consistency coefficient of the external assessments were computed, they showed acceptable to good values except for ZKPQ trait. The intercorrelations between each subscale of the BFI-2 and the TIPI are weak and close to zero. Also intercorrelations between BFI-2 facets were computed (supplementary material 2), having moderate correlations between all the facets of each trait.

#### 4. DISCUSSION

The main objective of this study was to explore the reliability and convergent correlations of the adaptation of the TIPI and the BFI-2 to Rio de la Plata's Spanish in samples of University students. Regarding internal consistency, for the BFI-2 the Cronbach's Alpha values were lower than Soto & John's (2017), but still being acceptable and good, in trait Extraversion and Open Mindedness the difference was of almost .10 comparing with the original study, and with Conscientiousness and Neuroticism with a difference of .05 approximately. Even though Soto and John (2017) did not provide McDonald's Omega, in this study it was calculated to provide a different value about the consistency of the scales and to avoid possible bias of Cronbach's Alpha (Dunn, Baugley & Brunsten, 2014); the values were similar for both coefficients, giving more strength to the internal consistency of the scale. In TIPI, correlations between the items that conform the 2-item traits were computed and expected to have weak to moderate values. This was achieved only in four of the five traits, Agreeableness items present a close to zero correlation. According to this information, the items concerning this trait in TIPI need to be reinterpreted, these are item 3 (inverted) "Crítico/peleador" (Critical, quarrelsome; in the original version) and ítem 7 "Simpático/cálido" (Sympathetic, warm; in the original version) because it seems that they are evaluating different latent constructs. The information provided from the internal consistency coefficients and the frequencies of response, suggests that the BFI item 43 of Conscientiousness "Es alguien confiable con quien siempre se puede contar" (Is reliable, can always be counted on; in the original version) could generate bias of response in the samples, that could be explained by the social desirability and needs to be reinterpreted, this effect can also be found in the Agreeableness BFI items that have more than 50% of response in 5, these are item 17 (inverted) "Siente poca compasión por los demás" (Feels Little sympathy for

others; in the original version) and item 52 “Es educada y cortés con los demás” (Is polite, courteous to others; in the original versión).

In the case of test retest the values for BFI-2 are acceptable and good, replicating and improving for Open Mindedness trait the value of Soto and John (2017). This improvement can be explained by the difference on the time elapsed between assessments, original study takes eight weeks between test and retest while this study takes two or three weeks between test and retest. Intraclass correlations were from good to excellent (Cicchetti, 1994) confirming, as expected, good stability in time for BFI-2. The case of TIPI is different, the only trait that replicates the original value of Gosling et al. (2003) is Neuroticism, the rest of the traits have lower coefficients, being unacceptable for Open Mindedness and Agreeableness. Conscientiousness and Extroversion values are lower than the original study but still acceptable, intraclass correlations for TIPI are from acceptable to good.

The correlations between the traits of the BFI-2 and TIPI with the other measures shows that both questionnaires are measuring what are expected, not only theoretically but also statistically. The correlations are stronger when the construct evaluated had more similar characteristics to personality traits of FFM (for example, trait anxiety with neuroticism or the extraversion subscale of EPQ with extraversion trait). The unacceptable value of Kuder Richardson coefficient in ZKPQ Aggression Hostility subscale, suggest that the scale is not consistent, and can explain why is better correlated with Neuroticism than with Agreeableness, when this is not expected theoretically. For Open Mindedness there was no specific external assessment. The moderate to strong relations between TIPI and BFI-2 reflect similar values as Gosling et al. (2003) study when a correlation between TIPI and BFI (John & Srivastava, 1999) was computed.

Intercorrelations for BFI-2 compared to Soto & John's (2017) were similar, varying at most .10, in the same direction as the original study. In case of TIPI, intercorrelations in Gosling et al. (2003) were computed for items and not for traits like in this study. The intercorrelations presented a theoretically expected statistical pattern between the traits, except for Extroversion trait, that has only an expected correlation with Agreeableness. The moderate intercorrelations of the BFI-2 facets gives statistical validity to the trait/facet structure of the scale.

In conclusion, the Big Five Inventory-2 has adequate reliability values and convergent correlation, for its use in research and clinical contexts, despite of the reinterpretation needed for some items. TIPI has acceptable reliability values, but some traits need to be reinterpreted, specifically Agreeableness and Open Mindedness, being recommended that the TIPI is used only to obtain a basic assessment of the FFM personality traits. If a more exhaustive personality indagation is needed, it is recommended to use the BFI-2, which provides in depth facet information of interest in any study.

#### **4.1 Limitations and future directions**

The main limitations of this study are the homogeneous samples, for this reason studies without University samples would increase the validity of the assessments, and are necessary before eliminating or rewriting any item. Thus more information about the convergent validity of Open Mindedness, as well as reported criteria and deeper analysis of the facets would be interesting in the future. As a follow-up study, models of CFA will be tested, since this analysis could be a conclusive support for the trait structure of BFI-2. Finally, to improve access to assessments of FFM future research could be focused on the validation of two new and reduced measures of personality, the BFI-2S and BFI-2XS (Soto & John, 2017), of 30 and 15 items respectively.

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Table 3.  
*Convergent and inter correlations of the TIPI and BFI-2*

|          | 2    | 3    | 4      | 5     | 6            | 7            | 8            | 9            | 10           | 11    | 12     | 13     | 14     | 15     |
|----------|------|------|--------|-------|--------------|--------------|--------------|--------------|--------------|-------|--------|--------|--------|--------|
| 1.TIPI_E | .14* | .09  | .02    | .36** | <b>.73**</b> | .13          | .26*         | -.25*        | .16          | -.04  | -.12   | .73**  | -.29** | .05    |
| 2.TIPI_A | -    | .16* | -.43** | .20** | .20          | <b>.64**</b> | .27**        | -.40**       | .13          | -.03  | -.13*  | .15    | -.44** | -.51** |
| 3.TIPI_C |      | -    | -.12   | .26** | .38**        | .17          | <b>.76**</b> | -.25*        | .21*         | .11   | -.28** | .09    | -.43** | -.19   |
| 4.TIPI_N |      |      | -      | -.03  | -.17         | -.35**       | -.29**       | <b>.76**</b> | -.21*        | -.10  | .13*   | -.06   | .68**  | .40**  |
| 5.TIPI_O |      |      |        | -     | .43**        | .26*         | .27**        | -.24*        | <b>.50**</b> | -.07  | -.09   | .26*   | -.35** | -.25*  |
| 6.BFI_E  |      |      |        |       | -            | .14*         | .31**        | -.30**       | .27**        | .13*  | -.17** | .73**  | -.45** | .06    |
| 7.BFI_A  |      |      |        |       |              | -            | .27**        | -.25**       | -.00         | .02   | -.11   | .13*   | -.27** | -.32** |
| 8.BFI_C  |      |      |        |       |              |              | -            | -.25**       | .06          | .28** | -.36** | .10    | -.35** | -.17** |
| 9.BFI_N  |      |      |        |       |              |              |              | -            | .02          | -.02  | .12*   | -.24** | .79**  | .34**  |
| 10.BFI_O |      |      |        |       |              |              |              |              | -            | .04   | -.12*  | .13*   | -.08   | -.01   |
| 11.CFC_F |      |      |        |       |              |              |              |              |              | .73   | -.36** | -.03   | -.04   | -.05   |
| 12.CFC_I |      |      |        |       |              |              |              |              |              |       | .78    | -.04   | .16**  | .12*   |
| 13.EPQ_E |      |      |        |       |              |              |              |              |              |       |        | .82    | -.31** | .04    |
| 14.STAI  |      |      |        |       |              |              |              |              |              |       |        |        | .87    | .30**  |
| 15.ZKPQ  |      |      |        |       |              |              |              |              |              |       |        |        |        | .47    |

*Note.* TIPI\_E=Extraversion trait of TIPI. TIPI\_O=Open Mindedness Trait of TIPI. TIPI\_C=Conscientiousness trait of TIPI. TIPI\_A=Agreeableness trait of TIPI. TIPI\_N=Neuroticism trait of TIPI. BFI\_E=Extraversion trait of BFI. BFI\_A=Agreeableness trait of BFI. BFI\_C=Conscientiousness trait of BFI. BFI\_N=Neuroticism trait of BFI. BFI\_O=Open Mindedness trait of BFI. CFC\_F= Consideration of Future Consequences Future Subscale. CFC\_I=Consideration of Future Consequences Immediate Subscale. EPQ\_E=Eysenck Personality Questionnaire Extroversion Trait. STAI=Trait scale of State Trate Anxiety Inventory. ZKPQ=Zuckerman Kuhlman Personality Questionnaire Aggression-Hostility subscale. Convergent correlations between specific traits of BFI-2 and TIPI were bolded. In the other assessments values of Cronbach's Alpha (or Kuder Richardson's for ZKPQ and EPQ) are presented.

## Annexed 1.

### *Big Five Inventory 2 - List of items:*

1. Es sociable, le gusta conocer gente nueva
2. Es compasiva, sensible.
3. Tiende a ser desorganizada
4. Es tranquila, maneja bien el estrés.
5. Tiene pocos intereses artísticos.
6. Es segura, tiene confianza en sí mismo.
7. Es respetuosa, trata a los demás con respeto.
8. Tiende a ser perezosa
9. Se mantiene optimista luego de enfrentar un contratiempo
10. Siente curiosidad por muchas cosas
11. Rara vez se siente emocionada o entusiasmada
12. Tiende a encontrar defectos en los otros
13. Es de confianza, genera seguridad
14. Cambia de humor sin motivo aparente
15. Es inventiva, encuentra formas ingeniosas de hacer las cosas
16. Tiende a ser callada
17. Siente poca compasión por los demás
18. Es organizada, le gusta mantener las cosas en orden
19. Puede ponerse tensa
20. Tiene mucho interés por el arte, la música o la literatura
21. Es dominante, se comporta como un líder
22. Inicia discusiones con los demás
23. Le cuesta iniciar sus tareas
24. Es segura, está a gusto consigo mismo.
25. Evita discusiones intelectuales, filosóficas.
26. Es menos activa que otras personas
27. Tiende a perdonar
28. Puede ser un tanto descuidada
29. Es emocionalmente estable, no se molesta fácilmente
30. Es poco creativa
31. Algunas veces puede ser tímida, introvertida

32. Es generosa, ayuda a los demás
33. Mantiene las cosas en orden
34. Se preocupa mucho
35. Valora el arte y la belleza
36. Le cuesta influenciar a las personas
37. A veces es irrespetuosa con los demás
38. Es eficiente, cumple con las tareas.
39. A menudo se siente triste
40. Es de pensamiento profundo
41. Está llena de energía
42. Sospecha de las intenciones de los demás
43. Es alguien confiable con quien siempre se puede contar
44. Mantiene sus emociones bajo control
45. Le cuesta ser imaginativa
46. Es conversadora
47. Puede ser fría e indiferente
48. Es desordenada, no limpia
49. Rara vez siente preocupación o temor
50. Le aburren la poesía y las obras de teatro
51. Prefiere que otros se hagan cargo
52. Es educada y cortés con los demás
53. Es persistente, trabaja hasta completar la tarea
54. Tiende a sentirse deprimida, melancólica
55. Tiene poco interés por las ideas abstractas
56. Muestra mucho entusiasmo
57. Presupone lo mejor de las personas
58. A veces se comporta de manera irresponsable
59. Es temperamental, se emociona fácilmente
60. Es original, tiene ideas nuevas



Annexed 2.

*Ten Item Personality Inventory – List of Items:*

1. Extrovertido(a)/Entusiasta
2. Crítico(a)/Peleador(a)
3. Confiable/Autodisciplinado(a)
4. Ansioso(a)/Fácilmente alterable
5. Abierto(a) a nuevas experiencias/Complejo(a)
6. Reservado(a)/Callado(a)
7. Simpático(a)/Cálido(a)
8. Desorganizado(a)/Descuidado(a)
9. Calmado(a)/Emocionalmente estable
10. Tradicional/Poco creativo(a)

Supplementary material 1.

*Descriptive statistics and frequencies of BFI and TIPI items*

| Item   | Mean (SD)   | % in 1 | % in 5 | Item    | Mean (SD)   | % in 1 | % in 5 | % in 7 |
|--------|-------------|--------|--------|---------|-------------|--------|--------|--------|
| BFI_1  | 3,89 (1,07) | 3      | 33,5   | BFI_36  | 3,40 (1,02) | 4      | 15,2   |        |
| BFI_2  | 4,22 (0,92) | 1,8    | 46,6   | BFI_37  | 4,15 (1,02) | 1,2    | 49,1   |        |
| BFI_3  | 3,06 (1,39) | 16,8   | 21,6   | BFI_38  | 3,87 (0,92) | 0,6    | 27,7   |        |
| BFI_4  | 3,01 (1,23) | 12,8   | 11,9   | BFI_39  | 2,96 (1,27) | 15,2   | 11,9   |        |
| BFI_5  | 3,70 (1,30) | 8,5    | 36,6   | BFI_40  | 4,23 (0,93) | 1,5    | 49,7   |        |
| BFI_6  | 3,44 (1,13) | 5,2    | 17,7   | BFI_41  | 3,46 (1,07) | 2      | 13,2   |        |
| BFI_7  | 4,61 (0,66) | 0,6    | 67,7   | BFI_42  | 2,51 (1,21) | 22     | 8,8    |        |
| BFI_8  | 2,59 (1,28) | 24,1   | 9,8    | BFI_43  | 4,50 (0,77) | 1,2    | 61,9   |        |
| BFI_9  | 2,48 (1,15) | 22,6   | 5,5    | BFI_44  | 2,78 (1,14) | 13,4   | 8,2    |        |
| BFI_10 | 4,43 (0,77) | 0,3    | 57,6   | BFI_45  | 3,86 (1,20) | 4,9    | 41,2   |        |
| BFI_11 | 4,06 (1,12) | 3      | 46,6   | BFI_46  | 3,52 (1,30) | 9,8    | 28,4   |        |
| BFI_12 | 2,94 (1,12) | 9,5    | 8,8    | BFI_47  | 2,87 (1,40) | 21,3   | 17,1   |        |
| BFI_13 | 4,14 (0,90) | 1,2    | 40,9   | BFI_48  | 4,03 (1,13) | 2,4    | 47,9   |        |
| BFI_14 | 2,69 (1,39) | 27,1   | 13,1   | BFI_49  | 3,60 (1,11) | 3,7    | 25     |        |
| BFI_15 | 3,60 (1,07) | 4      | 21,3   | BFI_50  | 3,84 (1,27) | 7      | 43,6   |        |
| BFI_16 | 3,04 (1,50) | 22     | 23,8   | BFI_51  | 3,80 (1,17) | 3,7    | 37,8   |        |
| BFI_17 | 4,38 (0,99) | 2,7    | 62,8   | BFI_52  | 4,36 (0,80) | 1,2    | 51,8   |        |
| BFI_18 | 3,37 (1,34) | 11     | 27,4   | BFI_53  | 4,08 (0,93) | 1,2    | 40,2   |        |
| BFI_19 | 3,57 (1,09) | 4,3    | 20,4   | BFI_54  | 2,67 (1,31) | 25,6   | 9,8    |        |
| BFI_20 | 3,78 (1,26) | 8,5    | 37,5   | BFI_55  | 3,64 (1,07) | 3,7    | 26,8   |        |
| BFI_21 | 2,98 (1,25) | 17,4   | 10,4   | BFI_56  | 3,72 (0,95) | 1,5    | 21     |        |
| BFI_22 | 3,48 (1,24) | 5,8    | 28,4   | BFI_57  | 3,40 (1,05) | 4,3    | 15,9   |        |
| BFI_23 | 2,93 (1,25) | 13,4   | 13,4   | BFI_58  | 3,23 (1,23) | 7,3    | 18,9   |        |
| BFI_24 | 2,46 (1,14) | 22     | 5,2    | BFI_59  | 3,63 (1,18) | 6,1    | 25,9   |        |
| BFI_25 | 3,73 (1,33) | 9,1    | 39     | BFI_60  | 3,63 (0,98) | 1,8    | 21,3   |        |
| BFI_26 | 3,22 (1,16) | 7,3    | 16,2   | TIPI_1  | 4,72 (1,76) | 7,4    |        | 13,2   |
| BFI_27 | 3,95 (1,07) | 4,3    | 36     | TIPI_2  | 3,69 (1,82) | 11,6   |        | 7,8    |
| BFI_28 | 2,87 (1,18) | 9,8    | 11,6   | TIPI_3  | 5,66 (1,29) | 0,4    |        | 30,6   |
| BFI_29 | 2,93 (1,29) | 15,5   | 14,9   | TIPI_4  | 4,53 (1,76) | 6,2    |        | 16,3   |
| BFI_30 | 3,74 (1,19) | 5,8    | 33,2   | TIPI_5  | 5,55 (1,44) | 2,3    |        | 29,5   |
| BFI_31 | 2,37 (1,26) | 0,3    | 9,1    | TIPI_6  | 4,12 (1,93) | 12     |        | 14     |
| BFI_32 | 4,23 (0,77) | 1,8    | 42,1   | TIPI_7  | 5,45 (1,31) | 1,9    |        | 20,2   |
| BFI_33 | 3,33 (1,19) | 6,1    | 22     | TIPI_8  | 4,48 (1,90) | 7      |        | 19,4   |
| BFI_34 | 3,99 (1,01) | 2,1    | 37,2   | TIPI_9  | 3,62 (1,75) | 12,4   |        | 7      |
| BFI_35 | 3,91 (1,13) | 3,7    | 39,6   | TIPI_10 | 5,03 (1,67) | 3,1    |        | 20,9   |

*Note.* The items were inverted before the analysis



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