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The final publication is available at:

<https://doi.org/10.1177/1073191111410166>

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Assessing the Five Factors of Personality in Adolescents: The Junior Version of the  
Spanish NEO-PI-R

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Acknowledgments:

This research was funded by grants PSI2008-05988 from the Spanish Ministry of Science, FEDER funds and the Spanish Ministry of Health (Plan Nacional Sobre Drogas). The authors wish to thank the high schools Martí Sorolla, Font de Sant Lluís, Jordi Sant Jordi, Lluís Vives, Cambridge House, Sagrado Corazón, Sixto Marco, Sos Baynat, Francisco Ribalta, Bahía de Babel, Vall d'Alba, and Miralcamp, and also Patricia Escrivá, Maria. A. Ruipérez, Felipe Hurtado, Ana Sánchez, and many other research assistants who helped make this study possible.

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### Abstract

This article presents the development of a Junior version of the Spanish (Castilian) NEO Personality Inventory-Revised (JS NEO) suitable for adolescents aged 12-18 years. The psychometric properties of the new JS NEO were investigated using two samples of 2,733 and 983 adolescents in Spain. The results showed that the adult NEO-PI-R factor structure was replicated with the junior version of the inventory and that the reliabilities of the scales were adequate. The cross-form correlations between the junior and the adult versions of the questionnaires indicated good equivalence indices. Furthermore, a joint factor analysis of the JS NEO and the Big Five Questionnaire-Children (BFQ-C) provided additional evidence for the construct validity of the JS NEO.

*Keywords:* junior Spanish NEO-PI-R, JS NEO, personality assessment, adolescents, Five-Factor Model

### Assessing the Five Factors of Personality in Adolescents: The Junior Version of the Spanish NEO-PI-R

Adolescence is an important transitional stage of life, and personality may play a relevant role in this period (McAdams & Olson, 2010). Personality traits are related to different life outcomes during childhood and adolescence, such as school performance, substance use and other health-related problems or psychopathology, among others (Abe, 2005; Bogg & Roberts, 2004; Ibáñez, et al., 2007; John et al., 1994; Lamb, Chuang, Wessels, Broberg, & Hwang, 2002; Lynam et al., 2005; Mervielde, Buyst, & De Fruyt, 1995; Miller, Lynam, & Jones, 2008). Furthermore, childhood and adolescent personality influence many domains of social and psychological functioning in adulthood, such as interpersonal relations, psychopathology, health, occupational attainment, or crime (Caspi, 2000; Dennissen, Asendorpf, & van Aken, 2008, Hampson, Goldberg, Vogt, & Dubanoski, 2006; Kubicka, Matejcek, Dytrych, & Roth, 2001; Shiner, Masten, & Roberts, 2003).

There are different models of personality trait structure (Boyle, Matthews, & Saklofske, 2008) and, among them, the Five-Factor Model (FFM) offers a useful descriptive taxonomy for most personality traits according to many personality psychologists (John, Naumann, & Soto, 2008). Various measures have been developed under the FFM (or the Big Five model) (see De Raad & Perugini, 2002), and the NEO-PI-R (Costa & McCrae, 1992) is one of the most comprehensive and widely used questionnaires for the assessment of adult personality for both research and applied purposes (Costa & McCrae, 2008). This inventory assesses the five broad dimensions or domains: Neuroticism, Extraversion, Openness to Experience, Agreeableness, and Conscientiousness, as well as six more specific traits or facets that define each of the five factors.

Different studies support the use of the NEO-PI-R scales and its short form, the NEO Five-Factor Inventory (NEO-FFI), in relevant fields such as quantitative and molecular genetics of personality (Bouchard & Loehlin, 2001; Munafó et al., 2009); industrial/organizational (Barrick, Mount, & Judge, 2001), educational (Chamorro-Premuzic & Furnham, 2008), health (Weiss & Costa, 2005), and clinical (Ruiz, Pincus, & Schinka, 2008) psychology; and other relevant life outcomes (Ozer & Benet-Martínez, 2006; Paunouen & Ashton, 2001). Furthermore, the NEO-PI-R has been successfully adapted to different languages around the world, which evidences the universality of the five-factor structure of personality (McCrae, Terracciano, & 78 Members of the Personality Profile of Cultures Project, 2005; Terracciano et al., 2005).

The above-mentioned relative consensus on the description of adult personality is still not present in the field of child temperament (De Pauw & Mervielde, 2010). Historically, temperament and personality research works have studied individual differences within different research traditions, thus making it difficult to compare and integrate findings from both fields. Therefore, it has been pointed out that research on life-span personality development requires the establishment of a consensual system to describe the structure of personality differences in both adulthood and childhood (Caspi, Roberts, & Shiner, 2005).

In recent years, increasing efforts have been made in the search for links between temperamental models and the FFM, and substantial convergence between them has been found (De Pauw & Mervielde, 2010; De Pauw, Mervielde, & Van Leeuwen, 2009; Rothbart, 2007). In addition, the five personality factors may be successfully identified in young children (Halverson et al., 2003; Measelle, Ablow, John, Cowan, & Cowan, 2005), although some difficulties have also been reported in indentifying the

Openness/Imagination dimension at lower ages (Lamb et al., 2002; Mervielde et al., 1995); moreover, possible additional temperamental factors have been described in childhood, such as activity or irritability (Abe, 2005; John et al., 1994; Lamb et al., 2002).

Nevertheless, there is compelling evidence that the FFM adequately represents the personality domain in older children and adolescents (Goldberg, 2001; Halverson et al., 2003; McCrae et al., 2002; Soto, John, Gosling, & Potter, 2008; Tackett, Krueger, Iacono, & McGue, 2008).

These findings have led to some authors consider the utility of the FFM as a bridge to integrate models of child temperament and adult personality (Caspi et al., 2005; De Pauw & Mervielde, 2010). Consequently, by studying personality development within the common framework provided by the FFM, findings on continuity and change can be compared in all the developmental stages from childhood and adolescence to young adulthood and adulthood (De Fruyt et al., 2006; Klimstra, Hale, Raaijmakers, Branje, & Meeus, 2009; Pullmann, Raudsepp, & Allik, 2006; Roberts & DelVecchio, 2000; Roberts, Walton, & Viechtbauer, 2006).

The study of personality within the FFM framework in adolescents requires psychometrically sound measures of the five personality factors and the specific traits. Thus, self-report personality measures have been used in children and adolescents when reading and writing abilities are well established. Questionnaires for adolescents have been developed following three main strategies: *a) Designing new age-specific questionnaires*, *b) Using adult questionnaires in adolescents with no modifications*, and *c) Adapting existing adult questionnaires for adolescents* (cf. De Fruyt, Mervielde, Hoekstra, & Rolland, 2000).

The aim of the first approach is to design new and specific self-report inventories assessing the personality of adolescents. The characteristics, which will eventually be measured by these scales, stem from the careful study and analysis of the individual differences observed in this age group. This bottom-up strategy has been mainly followed in the development of parental-rating scales for assessing the personality of young children. One example is the Inventory of Child Individual Differences (ICID; Halverson et al., 2003), which assesses 15 mid-level scales that combine into the FFM broad dimensions. The ICID has also been successfully used as a self-report instrument for adolescents (Deal, Halverson, Havill, & Martin, 2005). Another example is the Hierarchical Personality Inventory for Children (HiPIC; Mervielde & De Fruyt, 1999). Even though the HiPIC was primarily conceived as an observer inventory, it has also been used as a self-rating questionnaire for adolescents (De Fruyt et al., 2000). The HiPIC assesses 18 facets hierarchically organized under the five second-order dimensions Extraversion, Emotional Stability, Benevolence, Conscientiousness, and Imagination. Specifically developed for teenagers, the Adolescent Personality Style Inventory (APSI; Lounsbury et al., 2003) is another example of a self-report questionnaire that assesses the FFM in children aged 11-18 years. Although this bottom-up approach has been useful to describe adolescent trait structure, the use of different scales at different ages may make comparisons difficult in developmental studies of temperament and personality. Consequently, some authors emphasize the advantages of using the same scales at different ages (McCrae, Martin, & Costa, 2005), as proposed in the second strategy.

The second approach consists in using adult questionnaires with children and adolescents without modifying the item wording. This strategy is seldom used among personality trait models, and studies have been mainly carried out with the adult NEO-PI-R

and NEO-FFI (De Fruyt et al., 2000; Markey, Markey, Tinsley, & Ericksen, 2002; McCrae et al., 2002; Romero, Luengo, Gómez-Fraguela, & Sobral, 2002; Sherry, Henson, & Lewis, 2003). These investigations replicated the FFM structure in samples of children, especially when participants have a high level of intelligence (Parker & Stumpf, 1998), or in older adolescents (Allik, Laidra, Realo, & Pullmann, 2004). However, structural invariance does not mean that the adult NEO-PI-R is the most optimal to assess personality in adolescents (De Fruyt et al., 2000). Different studies found that this questionnaire includes items that prove too difficult to comprehend, or refers to characteristic adaptations that are less suitable for adolescents (De Fruyt et al., 2000; McCrae, Costa, & Martin, 2005; Romero et al., 2002; Sherry et al., 2003). Therefore the utility of adult versions of questionnaires, such as the NEO-PI-R, may not be the best option for assessing youths' personality, especially in early adolescence (Lounsbury et al., 2003).

By taking into account the problems associated with adult items, the third and most commonly applied approach in personality assessment consists of modifying the wording of the items of well-known adult questionnaires, such as Cattell's 16PF, Eysenck's EPQ or Cloninger's TCI, to make scales suitable for children. The process is similar when a personality questionnaire is to be used in different countries as some items have to be adapted to the culture and linguistic characteristics; so they are not just directly translated (Hambleton, 2001). Within the FFM, the use of this third strategy was adopted in the construction of a children's version of the Big Five Questionnaire (BFQ-C; Barbaranelli, Caprara, Rabasca, & Pastorelli, 2003). Recently, McCrae and Costa (Costa, McCrae, & Martin, 2008; McCrae et al., 2005) revised the NEO-PI-R and the NEO-FFI and developed the NEO-PI-3 and NEO-FFI-3 respectively in order to make them more suitable for respondents aged 12-14 and upward. Accordingly, this third approach seems the most



adequate to assess the FFM because it uses the same questionnaire at different stages of development, but some items have been adapted to adolescent population characteristics.

As far as we know, there is only one questionnaire in Spanish language that assesses personality factors in adolescents within the FFM, the Spanish version of the BFQ-C (Carrasco, Holgado, & Del Barrio, 2005). In addition, the Big Five Inventory has a Spanish version (BFI; Benet-Martínez & John, 1998), a questionnaire originally developed for adults, but its fifth-grade reading level makes it particularly well suited for young children (Soto et al., 2008). However, both instruments measure the five broad dimensions, but do not assess more specific traits or facets. Different studies have shown incremental validity of personality characteristics when using the NEO-PI-R to assess facets in different fields, such as clinical assessment (Quirk, Christiansen, Wagner, & McNulty, 2003), psychopathology (Miller et al., 2008), health (Schimmack, Oishi, Furr, & Funder, 2004), and other relevant life outcomes (Paunonen & Ashton, 2001).

Consequently, the assessment of the five broad domains and the thirty facets of Costa and McCrae's FFM in Spanish-speaking adolescents will improve with an adaptation of the Spanish NEO-PI-R for this age group in accordance with the above-mentioned third approach, which was the main aim of this study.

## **Method**

### **The Pilot JS NEO: Participants and Procedure**

The first step to construct the new junior version of the inventory (Pilot JS NEO) was to identify the items to be modified from the adult NEO-PI-R (the English language NEO-PI-3 was still not available when we started the present research work) and to substitute them for more appropriate ones (see Ortet et al., 2007). So, we administered the adult form to two boys and two girls aged 12 with average intellectual capacity. In order to

identify the problematic items, we took into account those items which at least two children pointed out were difficult to understand, as well as the items reported as problematic in the Spanish (Romero et al., 2002) and Flemish (De Fruyt et al., 2000) versions, and studies on younger children (Markey et al., 2002). As a result, 132 items needed a certain degree of modification. A back translation of these items was carried out by an English language teacher who was unfamiliar with the inventory. Robert McCrae, co-author of the NEO PI-R, analyzed the back translation and suggested some changes to adjust items to their original meaning. Of these 132 modified items, 40 differed slightly from the adult Spanish version of the NEO-PI-R (Avia, 2000), but not from the original English questionnaire. For instance, Item 1 "*I am not a worrier*" was amended slightly from the Spanish adult version, but back translated as the original item. The remaining 92 items had to be modified to some degree, or reworded to make the vocabulary adequate for this age group, and their content was adapted to our culture to assess the target trait. For example, Item 4 "*I tend to be cynical and skeptical of others' intentions*" and Item 35 "*I don't take civic duties like voting very seriously*" were changed to "*I am a person that doubts and makes a fool of other people's intentions*" and "*I don't take my class obligations very seriously*", respectively. Furthermore, we included 7 repeated items to control random responding, so the Pilot JS NEO comprised 247 items (240 + 7 repeated items). We excluded the seven repeated items during the analysis.

A variety of urban and rural, public and private high schools were chosen by the researchers with a view to obtaining a sample with socio-demographic characteristics that was similar to the Spanish adolescent population. Eight research fellows handed out the scales, followed the standard instructions and encouraged respondents to provide sincere

answers. All the attending students voluntarily completed the questionnaires in the classroom and did not receive any compensation for their participation.

The first sample (Sample 1) answered the Pilot JS NEO and consisted of 3,188 high school students (age range: 12-18 years). Of these participants, we eliminated 291 (9.1%) because they presented more than 40 blank items for random responding, acquiescence, negativism and the responses to the validity checks according to the criteria specified in the manual (Costa & McCrae, 1992). Controlling for acquiescence and negativism is important because it has been shown that they have strong effects on factor structure, especially in adolescents (Soto et al., 2008). We also eliminated an additional 164 (5.1%) participants from the total sample because they gave a different answer in more than 2 of the 7 repeated items included in the questionnaire (if the response was two or more points different in the 5-point Likert scale answer alternatives; e.g., if one answers “Agree” the first time, and “Disagree” the second, but not if one answers “Agree” the first time, and “Strongly Agree” the second). Coefficient alphas for the five domains were substantially lower in the set of invalid protocols (ranging from .42 to .65, *Mdn* = .58, for the five domains, and from .02 to .36, *Mdn* = .19, for the thirty facets) than those in the selected sample (ranging from .82 to .91, *Mdn* = .85, for the five domains, and from .36 to .76, *Mdn* = .63, for the thirty facets). The comparison between the valid and invalid protocols indicated that they were reasonably similar in terms of most socio-demographic characteristics (data not presented).

Thus, we carried out all the further Pilot JS NEO analyses on 2,733 respondents (1,542 girls, 1,190 boys and 1 participant who did not indicate gender,  $M_{\text{age}} = 14.6$  years, age range: 12-18 years) who had valid protocols. Table 1 shows the remaining characteristics. There was a reasonable participation rate for all ages, and also with regard to family structure and the parents' level of education and occupations.

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Table 1 about here

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### **The Final JS NEO: Participants and Procedure**

There were two reasons to use a second sample. First to improve the six scales (E3: Assertiveness, E4: Activity, O4: Actions, O6: Values, A3: Altruism, and A6: Tender-Mindedness) that were poor definers of their intended factor or presented low alpha reliabilities (see Tables 3 and 5). The second reason was to replicate the factor structure and reliability indices of the JS NEO, thus conferring validity to the questionnaire in another independent sample. Hence, we developed 74 replacement item candidates for the Pilot JS NEO. The new items were not only more readable, but also more familiar to the target adolescent population. An example of E4: Activity was *“I can’t sit still in class”*; an example of A6: Tender-Mindedness was *“It makes me feel bad when weaker classmates are bullied”*; or an example of O4: Actions was *“I like learning new activities and games”*. Therefore, this sample answered a 321-item version of the questionnaire (240 Pilot +7 repeated +74 replacement candidates). We found acceptable replacements for 28 pilot items (E3: Assertiveness, 3 items; E4: Activity, 5 items; O4: Actions, 5 items; O6: Values, 5 items; A3: Altruism, 4 items; and A6: Tender-Mindedness, 6 items) according to three criteria: the revised scale increased the loading on its intended factor, presented higher internal consistency and avoided content redundancy. Thus, the final JS NEO consisted of 240 items (212 from the Pilot version plus 28 sound replacements) and the 7 repeated items, which were not included in the analyses.

Sample 2 consisted of 1,090 participants, but the analyses did not include 107 (9.8%) of them in accordance with the same criteria of the NEO-PI-R manual ( $N = 42$ ) and

the repeated items ( $N = 65$ ) followed in Sample 1. Thus, all further analyses were conducted with 983 adolescents (482 girls, 498 boys, and 3 participants who did not indicate gender, age range: 12-18 years) who were recruited in the same way as in Sample 1. The comparison between the two samples (see Table 1) indicated that Sample 2 was somewhat more representative of the general Spanish population as the percentage of male and female adolescents was more equilibrated, and there were fewer parents with a university degree and more laborers (INE, 2005).

We performed test-retest, cross-form and a joint factor analyses in three smaller subsamples of the participants from this second sample (see Table 2). Subsample 2A comprised 550 participants (250 girls, 300 boys, age range: 12-18 years), and they completed the 321-item version one month later for test-retest reliability. Subsample 2B included 203 (107 girls, 94 boys, and 2 participants who did not indicate gender, age range: 15 to 18 years), and they answered the 321-item version and the adult Spanish NEO-PI-R for cross-form validity of the revised scales. Finally, a third subsample (Subsample 2C) consisted of 461 students (216 girls, 245 boys, age range: 12 to 16 years). These participants completed the 321-item version and BFQ-C short version for the joint factor analysis of both junior forms.

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Table 2 about here

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### **Factor Structure of the Pilot and Final JS NEO**

Following the recommendations of McCrae, Zonderman, Costa, Bond, and Paunonen (1996), we applied the Procustes rotation toward the American normative

structure of the adult NEO-PI-R (Costa & McCrae, 1992) to assess the factor replication of our adolescent versions (Pilot and final JS NEO). In order to carry out this rotation and to obtain the congruence coefficients (see McCrae et al., 1996), we previously conducted a principal component analysis and a varimax rotation on the Pilot and final JS NEO facets. In each case, the parallel analysis (Hayton, Allen, & Scarpello, 2004) carried out with the Monte Carlo PCA program for Parallel Analysis (Watkins, 2006) clearly confirmed the presence of five factors. Afterward, we entered the loadings obtained from the 30 scales in our samples into the SPSS program to perform the Procrustes rotation and to obtain the congruence coefficients for the Pilot (Sample 1) and the final JS NEO (Sample 2) versions.

In order to obtain further evidence for factor replication, we first divided Sample 2 by gender and evaluated the congruence coefficients for boys and girls. The total Sample 2 was also separated into three age groups (12-13, 14-15, and 16-18 years), and the corresponding congruence coefficients were obtained.

### **Measures**

Subsample 2B, in addition to the 321-item version of the JS NEO, completed the Spanish version (Avia, 2000) of the NEO-PI-R for adults (Costa & McCrae, 1992) one week later. The inventory comprises 240 items that were answered on a 5-point Likert scale ranging from *strongly disagree* to *strongly agree*. It assesses 30 specific traits or facets that define the five personality factors or domains: Neuroticism, Extraversion, Openness to Experience, Agreeableness and Conscientiousness. We obtained each domain score by aggregating scores on their 6 facets, and each personality facet has 8 items. The manual summarizes the reliability and validity data of the instrument (Costa & McCrae, 1999).

In the case of subsample 2C, the participants also completed the short form of the Spanish Big Five Questionnaire-Children version (BFQ-C short) one week later. This short

30-item version of the BFQ-C was developed to improve the fact that various items on the Intellect/Openness factor also loaded on Conscientiousness (Holgado, Carrasco, Del Barrio, & Chacón, 2009). Thus, we selected the five items with higher loadings on its intended factor and, at the same time, the lower loadings on the other four factors from the original 65-item BFQ-C (Barbaranelli, Caprara, & Rabasca, 2006). We also took into account the item content to obtain scales as heterogeneous as possible (John & Soto, 2007). The results showed an adequate five-factor structure (data not shown) and satisfactory alpha reliability indices: Energy/Extraversion = .70, Agreeableness = .72, Conscientiousness = .78, Emotional Instability = .76, and Intellect/Openness = .75.

### Results

Table 3 shows the factor loadings of the 30 facet scales on the Neuroticism, Extraversion, Openness to Experience, Agreeableness, and Conscientiousness factors of the Pilot and the final JS NEO versions after varimax rotation (the Procustes rotation loadings are not included). The resulting structure of the Pilot JS NEO in Sample 1 showed that three facet scales (E3: Assertiveness, A3: Altruism, and A6: Tender-Mindedness) were poor definers of their intended factor. Facet E5: Excitement Seeking presented a somewhat low loading on Extraversion, but its loadings on any of the other four factors were lower; thus we considered that the scale did not need modifying. The analysis of the factor loadings of the final JS NEO in Sample 2 showed that the revised facet scales of the Pilot version improved after modification. Facet E5: Excitement Seeking also improved its loading on Extraversion. On the other hand, all five factors from the final JS NEO were clearly recognized, and their facets had the highest loadings on the factor that they were assigned. There were important secondary loadings, most of which were also found with the adult inventory, such as N2: Angry Hostility on Agreeableness, reflecting that

disagreeable adolescents are often angry; or N5: Impulsiveness on Conscientiousness, indicating that low conscientiousness relates to impulsive tendencies. It is noteworthy that A6: Tender-Mindedness also showed an important secondary loading on Openness in our adolescent sample, suggesting that more empathic children have more open attitudes at younger ages.

We obtained the factor congruence coefficients between the original questionnaire and both the Pilot and final JS NEO versions after the Procrustes rotation toward the North-American structure of the NEO-PI-R. The congruence coefficients for the five domains ranged from 0.91 to 0.97 for the final JS NEO, indicating that the JS NEO closely approximates the adult structure. At the facet level, all the congruence coefficients for the final JS NEO were higher than 95% of rotations from random data, with the exception of O6: Values. The separated congruence coefficients for the final JS NEO in boys and girls are presented in Table 4. Four facets (E4: Activity, O6: Values, A1: Trust, and A3: Altruism) in boys and two facets (O4: Actions and O6: Values) in girls showed congruences below .85. We also obtained the factor and variable congruence coefficients by dividing Sample 2 into three age groups (see Table 4). Two variables (O4: Actions and O6: Values) in the 12-13 years age group presented low congruence coefficients. We also found two low values for the 14-15 years age group (E4: Activity, O6: Values) and, again, O6: Values for the 16-18 years age group.

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Tables 3 and 4 about here

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Table 5 presents the coefficient alpha reliabilities for the five domains and the 30 facet scales of the Pilot JS NEO version, as well as the one-month test-retest reliabilities for



the final JS NEO version. Four facet scales of the pilot JS NEO (E4: Activity, O4: Actions, O6: Values, and A6: Tender-Mindedness) presented low alphas in Sample 1. However, all the reliability indices were satisfactory for the final JS NEO in Sample 2. The above-mentioned four revised scales with rather low coefficient alpha values in the Pilot version showed adequate reliabilities after modification in Sample 2. The other two changed facets (E3: Assertiveness and A3: Altruism) retained their sound internal consistency values in Sample 2. Correlations between the junior and adult forms of the questionnaire are also presented in Table 5. These data provided evidence that the final JS NEO scales measure equivalent constructs as the domain scales correlations ranged from .80 to .88 and facet scales correlations ranged from .51 to .88 (*Mdn* = .72). As the adult version was answered one week later, the results may also reflect some attenuation in the correlations due to increased measurement error.

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Table 5 about here

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Table 6 reports the joint factor analysis and the Varimax rotation of the final JS NEO and the BFQ-C questionnaire. An inspection of the data reveals how all the BFQ-C domains primarily loaded on their JS NEO intended factor.

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Table 6 about here

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The intercorrelations among the five broad domain scales are presented in Table 7. The usual negative correlation between Neuroticism and Conscientiousness and the positive association between Extraversion and Openness to Experience in the adult NEO-PI-R were

also found in our final junior version. However, a significant correlation was found between Agreeableness and Conscientiousness in the adolescent sample.

Finally, Table 8 presents the means and standard deviations of the thirty facets and the five domain scales for the final JS NEO, together with the comparisons between genders. Cohen's *d* indicated that females obtained higher scores in Neuroticism, Openness to Experience and Agreeableness, and in most of the facets that is usually the case with the adult NEO-PI-R. These values may be used as norms for the Spanish adolescent population.

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Tables 7 and 8 about here

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### **Discussion**

Different studies have used the NEO-PI-R to assess adolescents' personality (McCrae et al., 2002), showing that the FFM replicated satisfactorily in this age group. However, some items of this adult personality inventory pose understanding problems for youths as they are too complex (e.g., cynical, shrewdness), or their content refers to characteristic adaptations which are suitable for adults, but are probably less meaningful for adolescents (e.g., civic duties like voting, workaholic) (De Fruyt et al., 2000; Markey et al., 2002; Romero et al., 2002). Thus, adapting these items by developing a junior version suitable for this age group will contribute to a better assessment of adolescents' personality (Barbaranelli et al., 2003; McCrae et al., 2005). Nonetheless, McCrae et al. (2005) considered that the best way of revising the NEO-PI-R in order to make it suitable for adolescents was to improve the readability of the inventory with minimum item changes. Accordingly, they created the NEO-PI-3, a modified version of the NEO-PI-R, by replacing

37 items of the 240; and the NEO-FFI-3, a modified version of the NEO-FFI with changes made to 15 items of the 60 it contains. These minor changes seemed adequate when North American adolescents rated their own personality (McCrae et al., 2005) and when college students rated the personality of adolescents from 24 cultures (De Fruyt et al., 2009).

However, we found that the adult Spanish NEO-PI-R needed more item changes when used with Spanish adolescents (132 items of 240). There may be three main reasons for the difference in the number of items to be modified in the NEO-PI-3 and the JS NEO (37 vs. 132). First, the Spanish adult NEO-PI-R is probably more difficult for adolescents than the original English version. For instance, when Romero et al. (2002) used the NEO-PI-R with minor changes in some items in adolescents whose mean age was around 16, they reported similar problems to our pilot study, and more difficulties than when the same instrument was used in other languages (De Fruyt et al., 2000; McCrae et al., 2002).

Accordingly, we found that 40 items from the Spanish NEO-PI-R, which were modified due to comprehension problems, were identical to the items of the original NEO-PI-R version when the back translation was carried out. Second, the mean age of the sample that McCrae et al. (2005) used to develop the NEO-PI-3 was around 17.6, whereas it was 14.6 in our samples. In addition, we focused on the problematic items reported by younger adolescents (aged 12) as the JS NEO was developed for a longitudinal prospective study in adolescents aged 12 at Time 1 who were followed-up until they were 16 at Time 2 (see Ibáñez et al., 2007). Third, the sample used for the NEO-PI-3 included 86.7% of adolescents with mostly B's and higher grades, so high academic achievers were overrepresented. Thus our sample included a younger heterogeneous and unselected sample than that used for the development of the NEO-PI-3.

In the pilot study, the Extraversion and Agreeableness domains presented some differentiation problems. Specifically, E3: Assertiveness loaded mainly on the Agreeableness factor, whereas A3: Altruism loaded mainly on Extraversion. Other Extraversion facets also presented substantial secondary loadings on Agreeableness, e.g., E4: Actions and E5: Excitement Seeking and other Agreeableness facets also presented secondary loadings on Extraversion, e.g., A1: Trust. In addition, A6: Tender-Mindedness presented a main loading on Openness. At the same time, four facets E4: Activity, A6: Tender-Mindedness, O4: Actions and O6: Values presented low reliabilities, suggesting some problems in within-domain coherence, especially for the Openness facets. This pattern has been found in younger adolescents (Costa et al. 2008), and an attenuated but similar trend seemed to emerge when the NEO-PI-R or NEO-PI 3 was used in older adolescents (McCrae et al., 2005; Romero et al., 2002). Overall, studies into youngsters using NEO inventories have found several reliability problems, especially for some Openness facets; and a certain blend between the Extraversion and Agreeableness dimensions: The Extraversion facets more related to vigor and activity also loading on Agreeableness, and the Agreeableness scales more related to the interpersonal domain also loading on Extraversion.

Some of these findings may reflect the personality developmental trends described in children; for example, suggesting that Activity and Sociability traits of Extraversion do not cohere together until the beginning of adolescence or that Openness might not fully emerge until adolescence (John et al., 1994; Mervielde et al., 1995). However, they may also indicate difficulties in verbal comprehension and a poor item adaptation to young adolescents. For example, Soto et al (2008) found that comprehension plays a modest but significant role in determining the coherence of youths' personality self-report using a

relatively easy questionnaire. The authors also hypothesized that this effect could be stronger for measures that include more difficult and unfamiliar items; we believe that this is the case of the Pilot JS NEO. Furthermore, Allik et al. (2004) found better psychometric properties in high-intelligent children than in low-intelligent children, suggesting that the personality structure of 12-year-old highly intelligent children were comparable to the adult personality structure, mainly due to its cognitive capabilities and verbal skills. In addition, when items were carefully adapted to younger ages, e.g., the APSI questionnaire (Lounsbury et al., 2003), the psychometric indices did not differ from those reported in adults. Hence, we consider that accurately adapting items to young adolescents using more comprehensible vocabulary and familiar situations related to underlying facets could solve some of the psychometric problems found with the Pilot JS NEO. Thus, we developed additional more suitable items for young adolescents in the final version of the JS NEO.

The factor analysis showed that the five domains and thirty facet structure of the adult NEO-PI-R was replicated satisfactorily with the final JS NEO (see Table 3). We found that the factor structure was not only replicated satisfactorily in the second independent sample (Sample 2), but that the revised facet scales improved after modification. All thirty facets loaded on their intended factor and, when a facet had high loadings on more than one factor, these facets corresponded to specific traits shared by more than one domain, which is usually the case with the NEO-PI-R (Avia, 2000; Costa & McCrae, 1992) or the NEO-PI-3 (McCrae et al., 2005). Moreover, factor congruence coefficients at the domain level were satisfactory in the total sample, and for boys and girls and for the three age groups, as shown in Table 4. These indices are comparable to the coefficients found in the adaptation of the adult NEO-PI-R to different countries and languages (McCrae & Costa, 1997). Factor congruencies at the facet level were mostly

satisfactory in the total sample, but also when participants were divided by gender or age. However a few facets, mainly in the Openness domain, showed low values in some of the groups, e.g., O4: Actions and especially O6: Values, although O6 presented a similar congruence in the American NEO-PI-R and the NEO-PI-3 in adolescents (McCrae et al., 2005). It is likely that these data may partially reflect the greater changes in items content in these Openness scales (as the lower correlations in the adult version indicated, see Table 5), thus supporting the notion that Openness to Experience is the most difficult domain for adolescents to comprehend (Soto et al., 2008).

The internal consistency reliability analyses of all facet scales of the inventory were satisfactory and similar to those obtained with the adult version (Avia, 2000; Caruso, 2000; Costa & McCrae, 1992), in samples of adolescents (De Fruyt et al., 2000; McCrae et al., 2002), and with the NEO-PI-3 (McCrae et al., 2005). The test-retest reliabilities were also adequate, showing good rank-order stability. As expected for composite measures, retest reliability was higher for the five domain scales. Our findings indicated that the modified scales from the Pilot version improved their reliability indices when tested again in Sample 2, and that the rest of the scales maintained their sound reliabilities in this independent sample.

Regarding the correlations between the junior and the adult forms of the NEO-PI-R in the subsample 2B, the five domains presented a high cross-instrument agreement, indicating that the adult and the junior forms measure the same factor domains. At the facet level, all the scales presented good equivalence indices. Moreover, the joint principal component factor analysis of the JS NEO and the BFQ-C provided additional evidence for the construct validity of the Junior Spanish version of the NEO-PI-R as the five broad dimensions and all the facet scales loaded primarily on their intended factor.

The intercorrelations among the five domain scales (see Table 7) showed that the higher correlation corresponded to Neuroticism and Conscientiousness, although this was noticeably lower than the values usually found (above  $-.50$ ) with the adult form of the inventory (Costa & McCrae, 1992; 1999). The habitual relationship between Extraversion and Openness to Experience was also found in our adolescent sample. Moreover, we found that Agreeableness and Conscientiousness also correlated, which is consistent with previous studies indicating an overlap between these dimensions at younger ages (Costa et al., 2008; Soto et al., 2008; Tackett et al., 2008).

Finally, the usual mean differences between genders found in the adult and adolescent samples with the adult NEO-PI-R or the NEO-PI-3 (Costa, Terracciano, & McCrae, 2001; McCrae et al., 2002) also led to replications in adolescents with the JS NEO. Accordingly, females scored higher on Neuroticism, Openness to Experience, and Agreeableness than males and, to a lesser degree on Extraversion, and there were no significant differences on Conscientiousness. Regarding the facet scales, boys only scored higher than girls in E5: Excitement Seeking.

In conclusion, the present research revealed that an accurate adaptation of the NEO-PI-R to adolescents enables a replication of the same adult structure in adolescents, not only at a domain level, but also at a facet level. The use of more readable items and familiar situations for this age group also facilitated a reliable and valid assessment of the FFM traits, including the most problematic facets for children, such as the Openness scales. Hence, although this study did not directly address whether the personality structure differed by age, it suggested that some of the coherence and differentiation problems found when using NEO questionnaires in adolescents, especially at younger ages, could be partly attributed to the use of difficult or irrelevant items for this population.

To summarize, our study showed that the JS NEO is a reliable and valid inventory for the assessment of the five broad domains and the thirty facets of personality in Spanish-speaking adolescents aged 12-18 years. It is noteworthy that Hispanics who live in the United States and Latin Americans from Central and South American countries speak variants of Spanish that differ from the Spanish (Castilian) spoken by Spaniards living in Spain. Nevertheless, previous cross-cultural studies (see Benet-Martínez & John, 1998; Silva, Martínez-Arias, Rapaport, & Ortet, 1997) have shown that only minor wording modifications are needed to develop “pan-Spanish” versions of personality questionnaires. This limitation of the study may be addressed by investigating the item wording and psychometric properties of the JS NEO in samples of Hispanic and Latin American teenagers.



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Table 1

*Sample 1 and 2 Characteristics*

		Sample 1		Sample 2		Sample 1		Sample 2	
Characteristics		N = 2,733	N = 983	Characteristics		Father	Mother	Father	Mother
		N (%)	N (%)			N (%)	N (%)	N (%)	N (%)
Gender	Males	1,190 (43.5)	498 (50.7)	Level of education	No studies	85 (3.1)	86 (3.1)	98 (10.0)	92 (9.4)
	Females	1,542 (56.4)	482 (49.0)		Primary	782 (28.6)	885 (32.4)	341 (34.7)	330 (33.6)
	Not indicated	1 (0.1)	3 (0.3)		Secondary	855 (31.3)	852 (31.2)	267 (27.2)	287 (29.2)
Age	12	407 (14.9)	129 (13.1)		University	789 (28.9)	728 (26.6)	107 (10.9)	125 (12.6)
	13	378 (13.8)	162 (16.5)		Not indicated	222 (8.1)	182 (6.7)	170 (17.2)	149 (15.2)
	14	429 (15.7)	192 (19.5)	Occupations	Liberal professions	666 (24.4)	336 (12.3)	193 (19.6)	98 (10.0)
	15	559 (20.5)	194 (19.7)		Businesswoman	273 (10.0)	82 (3.0)	31 (3.29)	8 (0.8)
	16	592 (21.7)	185 (18.8)		Clerical staff	606 (22.2)	679 (24.8)	197 (20.0)	338 (34.4)
	17	300 (11.0)	102 (10.4)		Civil servants	420 (15.4)	467 (17.1)	64 (6.5)	53 (5.4)
	18	68 (2.5)	19 (1.9)		Laborers	486 (17.8)	130 (4.8)	252 (25.6)	53 (5.4)
Family structure	One-parent family	256 (9.4)	84 (8.5)		Housewives	6 (0.2)	778 (28.5)		206 (21.0)
	Family with both parents	2,299 (84.1)	704 (71.6)		Students	3 (0.1)	10 (0.4)	1 (0.1)	8 (0.8)
	One step-parent family	95 (3.5)	33 (3.3)	Unemployed	39 (1.4)	98 (3.6)	34 (3.5)	52 (5.3)	
	Others	72 (2.6)	38 (3.9)	Retired	46 (1.7)	20 (0.7)	14 (1.4)	6 (0.6)	
	Not indicated	11 (0.4)	115 (11.7)	Others	72 (2.6)	59 (2.2)	50 (5.19)	40 (4.1)	
					Not indicated	116 (4.2)	79 (2.7)	147 (14.9)	121 (12.3)

*Note.* The comparison made between Sample 1 and Sample 2 indicated that there were no significant differences regarding age,  $t(3714) = 1.55, p > .05$ . However, we found significant differences for gender;  $\chi^2(1) = 20.16, p < .001$ ; family structure,  $\chi^2(3) = 16.35, p < .01$ ; the father's level of education,  $\chi^2(3) = 181.28, p < .001$ ; the mother's level of education,  $\chi^2(3) = 112.54, p < .001$ ; the father's occupation,  $\chi^2(3) = 146.10, p < .001$ ; and the mother's occupation,  $\chi^2(3) = 147.15, p < .001$ .



Table 3

*Varimax Rotated Factor Structure and Congruence Coefficients of the Pilot JS NEO (P) (N = 2,733) and Final JS NEO (J) (N = 983) Versions*

Facet scale	N		E		O		A		C		VC <sup>a</sup>	
	<i>P</i>	<i>J</i>	<i>P</i>	<i>J</i>	<i>P</i>	<i>J</i>	<i>P</i>	<i>J</i>	<i>P</i>	<i>J</i>	<i>P</i>	<i>J</i>
N1: Anxiety	.77	<b>.79</b>	.04	.02	.16	.16	.02	.05	.10	.05	.94	.96
N2: Angry Hostility	<b>.56</b>	<b>.58</b>	-.13	.07	-.01	.00	<b>-.52</b>	<b>-.48</b>	-.13	-.15	1.00	.99
N3: Depression	<b>.78</b>	<b>.80</b>	-.19	-.19	.11	.12	.07	.05	-.21	-.17	.98	.97
N4: Self-Consciousness	<b>.73</b>	<b>.73</b>	-.17	-.22	-.05	-.00	.10	.00	-.09	-.12	.99	1.00
N5: Impulsiveness	<b>.44</b>	<b>.49</b>	.21	.39	.15	.11	-.39	-.28	-.34	-.34	.99	1.00
N6: Vulnerability	<b>.74</b>	<b>.72</b>	-.12	-.17	-.08	-.10	.11	.02	-.25	-.28	.97	.99
E1: Warmth	-.08	-.13	<b>.77</b>	<b>.72</b>	.19	.12	.16	.31	.09	.13	.99	.98
E2: Gregariousness	-.02	-.06	<b>.69</b>	<b>.70</b>	-.04	-.11	.11	.15	-.03	-.04	.92	.96
E3: Assertiveness <sup>b</sup>	-.35	<b>-.42</b>	.30	<b>.50</b>	.20	.22	<b>-.51</b>	-.18	.11	.25	.96	.98
E4: Activity <sup>b</sup>	-.05	-.03	<b>.51</b>	<b>.68</b>	.16	.16	<b>-.44</b>	-.23	.03	.06	.89	.88
E5: Excitement Seeking	-.09	-.03	.37	<b>.46</b>	.23	.26	-.35	-.31	-.20	-.09	.95	.96
E6: Positive Emotions	-.20	-.21	<b>.71</b>	<b>.69</b>	.11	.15	-.06	.13	.16	.15	.95	.97
O1: Fantasy	.12	.14	.10	.09	<b>.55</b>	<b>.50</b>	-.18	-.04	-.15	-.23	.97	.98
O2: Aesthetics	.23	.14	.03	.06	<b>.69</b>	<b>.65</b>	.00	.05	.17	.18	.97	.98
O3: Feelings <sup>b</sup>	.05	.07	.34	.39	<b>.62</b>	<b>.58</b>	-.20	-.04	.03	.13	.94	.94
O4: Actions <sup>b</sup>	-.13	.01	.06	.32	<b>.49</b>	<b>.53</b>	.06	.07	-.04	.09	.96	.88
O5: Ideas	-.11	-.08	-.19	-.13	<b>.68</b>	<b>.73</b>	-.01	-.03	.32	.25	.95	.96
O6: Values <sup>b</sup>	-.04	-.11	.11	.00	<b>.47</b>	<b>.53</b>	.16	.28	-.18	-.20	.81	.81
A1: Trust	-.20	-.17	<b>.43</b>	.30	.09	-.08	<b>.50</b>	<b>.59</b>	.10	.21	.96	.88
A2: Straightforwardness	.09	.05	.05	-.08	.05	-.04	<b>.69</b>	<b>.74</b>	.12	.08	.97	.96
A3: Altruism <sup>b</sup>	-.06	-.13	<b>.51</b>	.26	.27	.28	<b>.41</b>	<b>.62</b>	.22	.22	.95	.88
A4: Compliance	-.07	-.08	.09	-.11	.02	-.06	<b>.70</b>	<b>.69</b>	.19	.23	.98	.95
A5: Modesty	.30	.27	.06	-.11	.18	.14	<b>.57</b>	<b>.61</b>	-.14	-.18	.91	.90
A6: Tender-Mindedness <sup>b</sup>	.19	.09	.15	.19	<b>.48</b>	<b>.43</b>	.24	<b>.54</b>	.03	.14	.79	.90
C1: Competence	-.20	-.27	.09	.11	.04	.11	.01	.07	<b>.80</b>	<b>.78</b>	.94	.97
C2: Order	.01	-.03	.03	.09	-.12	-.06	-.02	.03	<b>.69</b>	<b>.72</b>	.99	.99
C3: Dutifulness	-.08	-.09	.15	.09	.12	.16	.36	<b>.44</b>	<b>.67</b>	<b>.63</b>	.97	.94
C4: Achievement Striving	.04	-.03	.12	.14	.05	.10	-.09	.04	<b>.79</b>	<b>.81</b>	.95	.96
C5: Self-Discipline	-.20	-.24	.07	.06	.04	.07	.11	.19	<b>.79</b>	<b>.77</b>	.96	.96
C6: Deliberation	-.20	-.27	-.12	-.30	-.04	.01	.30	.26	<b>.64</b>	<b>.57</b>	.99	.99
Congruence <sup>c</sup>	.97	.97	.97	.97	.92	.91	.95	.95	.95	.95	.95	.95

*Note.* Components are rotated toward the American adult normative structure (Costa & McCrae, 1992). Loadings higher than .40 in the absolute magnitude are shown in boldface.

<sup>a</sup>Variable congruence coefficient; total congruence coefficient in the last row. <sup>b</sup>Scale changed from Pilot JS NEO. <sup>c</sup>Congruence with the American adult normative NEO-PI-R structure. Congruence coefficients  $\geq .86$  are higher than 95% of the rotations from random data (McCrae et al., 1996). The loadings and coefficients of the Pilot JS NEO (P) are presented in italics.

Table 4

*Final JS NEO Congruence Coefficients from the Sample 2 Subgroup Factor Analyses*

Scale	Males (N = 498)	Females (N = 482)	12-13 years (N = 291)	14-15 years (N = 386)	16-18 years (N = 306)
JS NEO Neuroticism	.96	.95	.95	.96	.94
N1: Anxiety	.96	.98	.97	.96	.94
N2: Angry Hostility	.99	.98	.98	.98	.99
N3: Depression	.97	.98	.94	.98	.97
N4: Self-Consciousness	1.00	.97	.98	.97	.97
N5: Impulsiveness	.99	1.00	.98	.99	.98
N6: Vulnerability	.98	.98	.96	.98	.98
JS NEO Extraversion	.96	.97	.94	.97	.96
E1: Warmth	.96	.97	.98	.96	.99
E2: Gregariousness	.93	.97	.97	.96	.94
E3: Assertiveness	.98	.99	.98	.96	.98
E4: Activity	.84	.90	.89	.83	.87
E5: Excitement Seeking	.98	.88	.94	.89	.98
E6: Positive Emotions	.97	.93	.96	.95	.95
JS NEO Openness to experience	.88	.92	.90	.87	.93
O1: Fantasy	.91	.99	.97	.94	.98
O2: Aesthetics	.92	.99	.98	.97	.99
O3: Feelings	.95	.93	.91	.94	.94
O4: Actions	.92	.81	.61	.88	.86
O5: Ideas	.96	.96	.89	.93	.99
O6: Values	.79	.84	.77	.78	.73
JS NEO Agreeableness	.93	.96	.96	.94	.95
A1: Trust	.80	.95	.92	.89	.89
A2: Straightforwardness	.95	.97	.92	.93	.95
A3: Altruism	.84	.93	.90	.87	.91
A4: Compliance	.93	.96	.95	.95	.97
A5: Modesty	.90	.92	.95	.86	.94
A6: Tender-Mindedness	.90	.92	.94	.88	.88
JS NEO Conscientiousness	.94	.96	.94	.94	.95
C1: Competence	.96	.97	.97	.97	.96
C2: Order	.98	.99	.98	.99	.98
C3: Dutifulness	.96	.94	.93	.94	.93
C4: Achievement Striving	.96	.97	.98	.95	.95
C5: Self-Discipline	.96	.97	.96	.96	.96
C6: Deliberation	.99	.97	.98	.99	.96
Total congruence	.94	.95	.94	.94	.95

*Note.* Congruence coefficients  $\geq .86$  are higher than 95% of the rotations from random data (McCrae et al., 1996).



**Table 5**  
*Internal Consistency Values of the Pilot (N = 2,733) and Final (N = 983) JS NEO, One-Month Test-Retest Reliabilities (N = 550) of the Final JS NEO and the Cross-Form Correlations (N = 203) between the Final JS NEO and the Adult NEO-PI-R versions.*

Scale	Coefficient $\alpha$		Test-retest	NEO-PI-R
	P	J	J	J
JS NEO Neuroticism	.88	.87	.83	.88
N1: Anxiety	.58	.55	.66	.71
N2: Angry Hostility	.59	.59	.73	.69
N3: Depression	.79	.77	.76	.83
N4: Self-Consciousness	.57	.57	.67	.62
N5: Impulsiveness	.53	.54	.67	.68
N6: Vulnerability	.65	.66	.70	.73
JS NEO Extraversion	.85	.87	.78	.80
E1: Warmth	.66	.64	.60	.63
E2: Gregariousness	.65	.61	.70	.72
E3: Assertiveness <sup>a</sup>	.64	.64	.70	.73
E4: Activity <sup>a</sup>	.44	.70	.76	.68
E5: Excitement Seeking	.62	.62	.74	.65
E6: Positive Emotions	.72	.68	.66	.73
JS NEO Openness to Experience	.82	.84	.83	.82
O1: Fantasy	.72	.69	.73	.78
O2: Aesthetics	.71	.70	.79	.75
O3: Feelings	.58	.50	.59	.60
O4: Actions <sup>a</sup>	.36	.67	.68	.53
O5: Ideas	.70	.65	.71	.76
O6: Values <sup>a</sup>	.38	.69	.72	.58
JS NEO Agreeableness	.82	.85	.82	.85
A1: Trust	.67	.64	.72	.57
A2: Straightforwardness	.54	.55	.68	.75
A3: Altruism <sup>a</sup>	.61	.66	.73	.68
A4: Compliance	.57	.56	.68	.75
A5: Modesty	.63	.61	.65	.76
A6: Tender-Mindedness <sup>a</sup>	.41	.68	.63	.51
JS NEO Conscientiousness	.91	.90	.84	.87
C1: Competence	.65	.67	.69	.58
C2: Order	.65	.62	.71	.78
C3: Dutifulness	.63	.63	.62	.62
C4: Achievement Striving	.63	.63	.67	.69
C5: Self-Discipline	.76	.75	.77	.83
C6: Deliberation	.74	.72	.73	.80

Note. <sup>a</sup>Scale changed from Pilot JS NEO. P = Pilot JS NEO; J = final JS NEO.

Table 6

*Joint Factor Analysis of the Final JS NEO and the BFQ-C (N = 461)*

	N	E	O	A	C
BFQ-C Emotional Instability	<b>.69</b>	-.08	.13	-.30	-.12
JS NEO N1: Anxiety	<b>.80</b>	.04	.10	.09	.03
JS NEO N2: Angry Hostility	<b>.63</b>	-.01	.01	<b>-.44</b>	-.23
JS NEO N3: Depression	<b>.79</b>	-.22	.07	.07	-.23
JS NEO N4: Self-Consciousness	<b>.71</b>	-.19	-.08	.01	-.17
JS NEO N5: Impulsiveness	<b>.56</b>	.30	.02	-.27	-.30
JS NEO N6: Vulnerability	<b>.68</b>	-.21	-.14	.03	-.32
BFQ-C Energy/Extraversion	-.10	<b>.73</b>	.22	.14	.12
JS NEO E1: Warmth	-.19	<b>.74</b>	.05	.24	.07
JS NEO E2: Gregariousness	-.03	<b>.72</b>	-.17	.07	-.03
JS NEO E3: Assertiveness <sup>c</sup>	-.39	<b>.51</b>	.25	-.20	.26
JS NEO E4: Activity <sup>c</sup>	.02	<b>.67</b>	.13	-.28	-.01
JS NEO E5: Excitement Seeking	.03	<b>.42</b>	.28	-.35	-.09
JS NEO E6: Positive Emotions	-.18	<b>.71</b>	.12	.08	.14
BFQ-C Intellect/Openness	-.28	-.02	<b>.55</b>	-.08	.33
JS NEO O1: Fantasy	.09	.17	<b>.47</b>	-.02	-.30
JS NEO O2: Aesthetics	.15	.06	<b>.64</b>	.04	.10
JS NEO O3: Feelings	.09	<b>.40</b>	<b>.58</b>	-.02	.08
JS NEO O4: Actions <sup>c</sup>	.08	.39	<b>.47</b>	.09	.12
JS NEO O5: Ideas	-.02	-.12	<b>.78</b>	.00	.19
JS NEO O6: Values <sup>c</sup>	-.16	.05	<b>.47</b>	.27	-.17
BFQ-C Agreeableness	-.05	.27	.36	<b>.52</b>	.32
JS NEO A1: Trust	-.24	.26	-.06	<b>.58</b>	.20
JS NEO A2: Straightforwardness	-.06	-.10	-.04	<b>.74</b>	.04
JS NEO A3: Altruism <sup>c</sup>	-.08	.24	.34	<b>.62</b>	.22
JS NEO A4: Compliance	-.13	-.09	-.09	<b>.68</b>	.25
JS NEO A5: Modesty	.21	-.11	.07	<b>.57</b>	-.18
JS NEO A6: Tender-Mindedness <sup>c</sup>	.05	.18	<b>.45</b>	<b>.58</b>	.10
BFQ-C Conscientiousness	-.13	.01	.04	.23	<b>.78</b>
JS NEO C1: Competence	-.29	.13	.15	.08	<b>.78</b>
JS NEO C2: Order	-.08	.09	-.09	-.07	<b>.71</b>
JS NEO C3: Dutifulness	-.12	.09	.17	<b>.42</b>	<b>.64</b>
JS NEO C4: Achievement Striving	-.08	.15	.09	.03	<b>.79</b>
JS NEO C5: Self-Discipline	-.30	.08	.12	.13	<b>.78</b>
JS NEO C6: Deliberation	-.28	-.32	.06	.26	<b>.55</b>

*Note.* Loadings higher than .40 in the absolute magnitude are shown in boldface.

Table 7

*Intercorrelations Among the Final JS NEO Five Dimensions (N = 983)*

	N	E	O	A	C
Neuroticism (N)		-.25***	.07	-.13***	-.43***
Extraversion (E)			.36***	.08*	.18***
Openness to experience (O)				.25***	.14***
Agreeableness (A)					.37***
Conscientiousness (C)					

\* $p < .05$ . \*\*\* $p < .001$ .

Table 8

*Means and Standard Deviations for the Final JS NEO, p Values, and Cohen's d Associated with Gender*

Scale	Combined (N = 983)		Males (N = 498)		Females (N = 482)		t-test	Cohen's
	M	SD	M	SD	M	SD	p	d
<b>Domains</b>								
N: Neuroticism	91.45	19.34	87.79	18.62	95.36	19.37	<.001	.40
E: Extraversion	121.00	18.31	119.46	17.92	122.65	18.66	<.01	.17
O: Openness	113.30	16.98	108.71	16.09	118.13	16.61	<.001	.58
A: Agreeableness	115.95	16.66	111.85	16.16	120.22	16.11	<.001	.52
C: Conscientiousness	112.73	20.37	112.34	20.74	113.19	19.95	ns	.04
<b>Neuroticism facets</b>								
N1: Anxiety	17.16	4.05	16.22	4.03	18.15	3.83	<.001	.49
N2: Angry Hostility	13.89	4.42	13.78	4.48	14.01	4.36	ns	.05
N3: Depression	15.06	5.53	14.19	5.17	15.98	5.75	<.001	.33
N4: Self-Consciousness	16.19	4.45	15.77	4.58	16.64	4.28	<.01	.20
N5: Impulsiveness	16.94	4.04	16.59	3.90	17.31	4.15	<.01	.19
N6: Vulnerability	12.77	4.29	11.82	4.15	13.76	4.23	<.001	.46
<b>Extraversion facets</b>								
E1: Warmth	22.49	4.05	21.71	4.00	23.31	3.99	<.001	.40
E2: Gregariousness	19.12	4.62	18.25	4.51	20.01	4.58	<.001	.39
E3: Assertiveness	17.30	4.14	17.27	4.03	17.34	4.26	ns	.02
E4: Activity	18.73	4.64	18.83	4.55	18.64	4.76	ns	.04
E5: Excitement Seeking	20.42	4.86	20.94	4.76	19.89	4.92	<.01	.22
E6: Positive Emotions	22.67	4.42	22.11	4.32	23.26	4.47	<.001	.26
<b>Openness facets</b>								
O1: Fantasy	17.26	4.95	16.58	4.86	17.96	4.95	<.001	.28
O2: Aesthetics	15.93	5.51	14.09	5.36	17.87	5.00	<.001	.73
O3: Feelings	19.68	3.49	19.21	3.50	20.19	3.41	<.001	.28
O4: Actions	21.31	4.35	20.60	4.32	22.04	4.28	<.001	.33
O5: Ideas	16.62	4.66	16.45	4.72	16.80	4.59	ns	.08
O6: Values	22.47	4.38	21.37	4.51	23.01	4.08	<.001	.38
<b>Agreeableness facets</b>								
A1: Trust	18.72	4.02	18.54	3.93	18.93	4.10	ns	.10
A2: Straightforwardness	18.00	4.24	17.00	4.08	19.03	4.17	<.001	.49
A3: Altruism	20.36	3.79	19.72	3.75	21.03	3.71	<.001	.35
A4: Compliance	17.38	4.34	16.89	4.29	17.89	4.34	<.001	.23
A5: Modesty	19.03	4.15	18.20	4.12	19.91	4.02	<.001	.42
A6: Tender-Mindedness	22.46	4.28	21.31	4.35	23.68	3.85	<.001	.58
<b>Conscientiousness facets</b>								
C1: Competence	19.37	4.21	19.74	4.35	18.99	4.04	<.01	.19
C2: Order	18.61	4.44	18.53	4.49	18.70	4.35	ns	.04
C3: Dutifulness	21.73	4.05	21.08	4.07	22.41	3.93	<.001	.33
C4: Achievement Striving	19.55	4.04	19.43	4.08	19.70	4.00	ns	.07
C5: Self-Discipline	17.95	5.02	17.84	5.01	18.07	5.01	ns	.05
C6: Deliberation	15.71	4.82	15.92	4.76	15.50	4.87	ns	.09

*Note.* *ns* = nonsignificant difference; Cohen's *d* values of .20, .50, and .80 correspond to small, medium, and large effect sizes, respectively (Cohen, 1992).