1   The Berliner Multi-Facet Personality Inventory: An extensive measure of Big Five

2   personality

3   Victor Rouco[1,2], Anja Cengia[3], & Matthias Ziegler[3]

4   [1] Universitat de Barcelona

5   [2] Institut de Neurociències de Barcelona

6   [3] Humboldt Universität zu Berlin

7   Author Note

8   Add complete departmental affiliations for each author here. Each new line herein

9   must be indented, like this line.

10   Enter author note here.

11   Correspondence concerning this article should be addressed to Victor Rouco, Postal

12   address. E-mail: victorrouco@ub.edu

Abstract

Enter abstract here. Each new line herein must be indented, like this line.

Keywords: keywords

Word count: X

The Berliner Multi-Facet Personality Inventory: An extensive measure of Big Five personality

1. Introduction

Over the last decades, the Five Factor Model as well as the Big Five model have become widely accepted models for describing general attributes of personality. Often the terms are even used synonymously, which is why we will refer to the Big Five from here on. The Big Five is a hierarchical model which describes human individual differences in personality at the dispositional level: one of the most basic, universal, biologically-influenced and stable layers of human inter-individual differences in behavior, cognition and feeling (D. P. McAdams & Pals, 2006). Its hierarchical conception is relevant to acknowledge behavior from the most specific (nuances) to the most broad differences in temperament and character (dimensions), through a varying number of mid-level personality characteristics (facets). Most of the research concerning criterion validity of the Big Five inventories has focused on the covariation between the Big Five dimensions and relevant external outcomes. However, specific dispositional characteristics captured on the facet level might be of extreme utility to provide more complex descriptions of individuality and to predict life outcomes to a major extent (Lounsbury, Sundstrom, Loveland, & Gibson, 2002; S. V. Paunonen & Ashton, 2001; Ziegler et al., 2014). Unfortunately, the number and nature of the facets below the Big Five is far from being consensual. In fact, different facet level models have been proposed (XXXX). One potential reason for this could be that many facet level models were developed after a questionnaire version without such a level had been published. Thus, the facets were developed as an elaboration or extension to an existing domain measure. While this has many theoretical advantages it also has the disadvantage of potentially limiting the search space of possible facets. In this work we aim at maximizing this search space and present a personality questionnaire which is broad at the facet level, open-access, and measurement invariant across two different cultures.

1.2. A short history of the Big Five

Francis Galton is credited as being the one who proposed the fundamental lexical hypothesis as a ground from where to describe interpersonal differences in personality. The hypothesis states that every apprehended characteristic in the realm of personality should have its place in the natural language, a corollary derived from this first statement is that the essential features must represent a unique word in the lexical universe of this language. Galton (1884) himself, and later Allport and Odbert (1936) and still later Norman (1967), used English dictionaries for a systematic collection of all adjectives which could be related to human personality characteristics. Using exploratory factor analyses on self and other ratings, five broad factors could repeatedly be extracted from the data.

Cattell was one of the first researchers who systematically applied exploratory factor analysis in order to explore personality structure. He inspected the correlation structure of the items in the word lists of his predecessors, finding 16 oblique personality factors, including one factor specifically for intelligence, these factors form the 16-PF. These 16 factors were the primary factors in a hierarchical structure for Cattell (coetany to L.L. Thurstone and undoubtedly influenced by him). Cattell himself viewed personality as a hierarchical structure, containing three layers (Cattell, 1956). The second order factors resemble the Big Five dimensions (Digman, 1990).

Different researchers followed Cattell in the study of dispositional traits of personality. One of the most influential models was Eysenck's Big Three. Grounded on a strong biological basis, Eysenck's theory supposed a link between temperament and personality. Its structural proposal concerned at first two big factors, named Neuroticism vs. Emotional stability and Extraversion vs. Introversion. These two dimensions were later joined by a third factor that Eysenck called Psychoticism. This label was criticized by others who suggested that a more appropriate term would be psychopathy (Digman, 1990). Eysenck's big two are

still "alive"" today in the Big Five, and his third factor, psychoticism, can be operationalized as other dimensions within the Big Five: Agreeableness, Conscientiousness and Openness.

A large number of studies have focused on the problem of personality structure resulting in a five factor solution (Borgatta, 1964; Fiske, 1949; Norman, 1967; Tupes & Christal, 1961). Possibly the two most widely cited works relating to the foundations of the Big Five are those by L. R. Goldberg et al. (2006) and P. T. Costa and McCrae (1995). Goldberg can be seen as one of the first who extended research concerning the Big Five, while McRae and Costa's importance rests on popularizing the terminology (OCEAN) and the development of one of the most used tools to assess personality based on the Big Five: the NEO-PI. The Big Five dimensions are labeled as follows: I) Extraversion vs. Introversion. II) Agreeableness or Friendliness. III) Conscientiousness or Achievement or Will. IV) Emotional Stability vs. Neuroticism, and V) Openness or Intellect or Culture.

One of the most important features of the Big Five is the fact that it could be replicated in different languages. Research is available in Japanese, Vietnamese, German, Spanish, Greek, and many more (**???, ???**). This finding suggests that the way human beings construe personality is at some point universal and that its basic features are retained within the Big Five. Another essential characteristic relies on its hierarchical nature. The five domains are useful to retain the big picture of personality, maximize the situation consistency and reliably assess difficult subjects such as children. Nonetheless, each dimension is conceptualized as a latent construct formed by more specific narrow factors called facets, which in turn are useful to depict the impact of personality characteristics into specific behaviors and concrete life outcomes.

The Big Five has proven to be a valid theoretical and empirical model to predict relevant life outcomes. Research such as Ozer and Benet-Martínez (2006) or B. W. Roberts, Kuncel, Shiner, Caspi, and Goldberg (2007) has shown that scores for the Big Five dimensions (and their related facets) are able to explain outcomes such as academic and

94 work performance, health, personality disorders, political attitudes and many more. The

95 empirical findings linking Big Five measures to life outcomes have reinforced the concurrent

96 validity of the test scores interpretations. At the same time, the broad nature of the domains

97 has spurred research into the more fine-grained lower order structure of facets.

98 **1.3. Facet Structures**

99   There are a number of models that include a facet structure below the five broad

100 domains. The most widely known model is the one suggested by P. T. Costa and McCrae

101 (1995), the NEO-PI-R model. Other popular models have been suggested for the Big Five

102 Inventory 2 (BFI-2; Christopher J Soto & John, 2016), the IPIP (L. R. Goldberg et al.,

103 2006), and the HEXACO model (Lee & Ashton, 2016), which assumes six broad domains.

104 *Table 1* gives an overview of these different models listing their facets per domain as well as

105 some information regarding their psychometric properties.

106   < Table 1 >

107   As shown in *Table 1*, there are different possibilities of facets forming the domains.

108 However, there is still a degree of overlap between the facets covered by the different

109 instruments. Christopher J. Soto and John (2009) inspected the convergences between the

110 NEO-PI-R and the first version of the BFI, suggesting that two constructs per domain were

111 measured at the facet level by both inventories. The constructs defined by Christopher J.

112 Soto and John (2009) were: *Altruism* and *Compliance* for Agreeableness; *Anxiety* and

113 *Depression* for Neuroticism; *Order* and *Self-Discipline* for Conscientiousness; *Assertiveness*

114 and *Activity* for Extraversion; and *Aesthetics* and *Ideas* for Openness. The convergence holds

115 for the four instruments listed in *Table 1*, as these ten constructs are covered within the

116 facets for every instrument. Some of the constructs are explicitly covered at the facet level

117 (e.g. Anxiety); meanwhile others are mainly covered by the four instruments, although

118 sometimes implicitly (e.g. Liveliness in HEXACO resembles the "core" construct Activity,

119 present in all other instruments). The reverse is not always true, not every facet within the

120 four instruments is covered by the constructs proposed by Christopher J. Soto and John

121 (2009). As an example we find Self-Consciousness, a Neuroticism facet defined by the

122 NEO-PI-R and the IPIP-NEO-120, which is not intrinsically tapping at either Anxiety or

123 Depression. The same authors asserted in a later work (Christopher J Soto & John, 2016)

124 that the Big Five domains *"can be conceptualized and assessed more broadly or more

125 narrowly"*, either focusing in a central facet or in a set of peripheral facets, depending the

126 research interest.

127 The mid-level layer between domains and facets has also been explored by DeYoung,

128 Quilty, and Peterson (2007). Their work has focused in the biological consistency of the

129 NEO-PI-R set of facets, thereby proposing a two factor source of variance for each facet of

130 the inventory. In line with their proposal, Agreeableness would be composed by *Compassion*

131 and *Politeness*; Neuroticism by *Volatility* and *Withdrawal*; Conscientiousness by

132 *Industriousness* and *Orderliness*; Extraversion by *Enthusiasm* and *Assertiveness*; and

133 Openness by *Intellect* and *Openness*. Both Christopher J. Soto and John (2009) and

134 DeYoung et al. (2007) proposals have many points in common. Maybe the labels *Volatility*

135 and *Withdrawal* for Neuroticism can be suspicious of a different content than *Anxiety* and

136 *Depression*, but when inspected at the item level it is revealed that they are tapping the

137 same components respectively (DeYoung et al. (2007); for item specification).

138 The nomological network commonly assumed in Big Five questionnaires is drawn from

139 nuances through facets to domains, from more specific to more general. Relying on domains

140 to explain and predict behavior can benefit from ease of interpretability. However,

141 predictions for specific contexts can be enhanced if a more specific set of traits is used. On

142 the other hand, using nuances to predict behavior might yield even stronger predictive

143 ability (Seeboth & Mõttus, 2018), but as the number of predictors grows the interpretations

144 become more complex. Facets are on a middle ground between nuances and domains, in a

145 compromise between specificity and sensitivity in the bandwidth-fidelity dilemma. This

146 narrow aggregation both satisfies the specificity of predictions to concrete situations and

147 environments and also enhances the ease of interpretability when summarizing individual

148 personality characteristics.

149 • I'm going to try to explain more clearly what facets can predict until the end of this

150   section. It will serve us to state the hypothesis regarding the criterion validity part.

151 Personality measured at the facet level has found to be a strong predictor of a large

152 number of outcomes. Satisfaction with life (SWL) is one of them. Neuroticism and

153 Extraversion were recognised as the most important personality dimensions in the prediction

154 of subjective satisfaction (**???**; Diener, Oishi, & Lucas, 2003). Lately, (**???**) observed that

155 the analysis at the facet level outperform the analysis at the domain level. They observed

156 that *Depression* and *Positive Emotions / Cheerfulness* explained SWL above and beyond the

157 dimensions they belong to, reaching to a 30% of explained variability of SWL.

158 Another relevant outcome that has shown to be best predicted with personality at the

159 facet level is academic achievement. Conscientiousness and Openness to experience have

160 been regarded as the most important dimensions to predict academic success. The relation of

161 Conscientiousness with school grades has gained a stable empirical evidence, widely inspected

162 in the meta-analysis by O'Connor and Paunonen (2007), were the mean correlation was $r =$

163 .24. Openness is supposed to play an important role in predicting academic achievement,

164 however evidence has been elusive at the dimension level (**???**). Often different facets within

165 the same domain can have effects in opposite directions, partially canceling out the

166 predictive ability of the dimensions. This could be the case of Openness to experience, were

167 facet-level analysis can be unveiling. S. V. Paunonen and Ashton (2001) showed that the

168 facets *Achievement motivation* and *Intellectual curiosity* increased the variance accounted for

in college students' grades, above and beyond Conscientiousness and Openness to experience. Similarly, Lounsbury et al. (2002) provided evidence regarding the facets *Work drive* and *Aggression*, which added an extra 12% of explained variance over the Big Five domains on 10th grade students' GPA. Ziegler, Danay, Schölmerich, and Bühner (2010) showed that better college grades were associated with low *Gregariousness*, *Excitement seeking* and *Order* as well as high *Activity*, *Openness to ideas* and *Openness to values*. *Openness to fantasy* for men ($r = $ -.22) and *Aesthetics* for women ($r = $ -.19) were found negatively to academic achievement (De Fruyt & Mervielde, 1996). (Ziegler, Bensch, Maas et al., 2014), a facet which may undermine the overall effect of the dimension on academic success.

Likewise, personality has proven to be a powerful predictor of laboral and educational abseentism (**???, ???**). Research has highlighted the predictive power of personality over integrity test when predicting absences (**???**). Again, most research has focused on the dimensional level, although some researchers suggested that personality assessed at a narrower level would improve the predictive ability of the models (**???, ???**). Nonetheless, few studies have explored this relationship to our knowledge, being (**???**) and (**???**) the most prominent. (**???**) reported no predictive gain when examining personality at the facet level for the NEO-PI-R composites of Extraversion and Conscientiousness, whereas (**???**) found a modest predictive gain of *Work drive* over the Big Five dimensions. Therefore, and despite the conceptual expectation of facets maximizing the predictive ability of personality on abseentism, evidence has manifested in favour of a less fined grained analysis.

Lastly, cognitive ability

As described above, facet measures often yield scores that have stronger test-criterion correlations than their respective domain scores. However, facet scores have also been shown to be related to personality disorders. Thus, the combination of a higher fidelity along with the potential clinical relevance of facet scores might open up unique advantages for clinical research.

1.4. The Big Five and Personality Disorders

Personality disorders are steadily shifting from a categorical definition into a continua conceptualization within the clinical realm. This process is not new for personality science history, as the subject itself moved from a qualitatively distinct set of definitions, called types, into a subset of continuous domains in which both normality and extreme tendencies were moving along, named traits. In fact, the new version of the Diagnostic and Statistical Manual of mental disorders, DSM-V, now proposes two different ways of assessing personality disorders: 1) A descriptive model of personality disorders in section II which mimics the former model of assessing personality disorders and; 2) A novel trait model that follows research on the personality scientific domain (In section III), which conceptualizes personality disorders as extreme tendencies located in the continuum of the Big Five domains and facets (American Psychiatric Association, 2013; T. A. Widiger & Mullins-Sweatt, 2009)

This paradigm shift in clinical assessment of personality has led to the construction of the Personality Disorder Inventory (PID-5; R. F. Krueger, Derringer, Markon, Watson, & Skodol, 2012), a 25-facet and five-dimension self-report inventory, with an informant-report version (K. E. Markon, Quilty, Bagby, & Krueger, 2013). These five dimensions mirror the Big Five domains, although with a focus on the maladaptative end of the continuum,: I) Detachment (Big Five's Introversion), II) Antagonism (absence of Big Five's Agreeableness), III) Disinhibition (absence of Big Five's Conscientiousness), IV) Negative affect (Big Five's Neuroticism) and V) Psychoticism (Absence of Big Five's Openness). The PID-5 has shown satisfying evidences of criterion validity (. . . summary). However, the number of facets per domain on the PID-5 is limited.

In line with what has been stated previously for academic achievement, the examination of facets may result in an enhancement of the specificity of assessment when looking at the nature of PDs (L. A. Clark, 2005; Samuel & Widiger, 2008). This

220 improvement of specificity resulted in a predictive gain ranging from 3% to 16% when

221 comparing facets to domains predicting PD in a study by Reynolds and Clark (2001).

222 Furthermore, the use of facets may be of extreme utility for those PD whose personality

223 profile is less clear at the domain level. As Saulsman and Page (2004) pointed out,

224 Schizotypal and Obsessive-Compulsive disorders are examples of PD which are not well

225 covered by Big Five domains. A reason for it may be found in a pattern inconsistency of

226 facets within the same dimension or in a lack of coverage for essential characteristics of the

227 PD. For example, aberrant cognitions are essential characteristics of schizotypal disorder and

228 are not covered by some instrument's facets like the NEO-PI-R (Samuel & Widiger, 2008;

229 Saulsman & Page, 2004). Likewise, the expected high scores on warmth and low scores on

230 assertiveness could mask the effects of extraversion when predicting Dependent Personality

231 Disorder, following the theoretical correspondence between PD and Big Five facets proposed

232 by Costa Jr. and Widiger (1994). Moreover, the PID-5 has prompted the elaboration of a

233 number of Five Factor Model Personality Disorders (FFMPD) scales to maximize the facet

234 coverage in relation to specific PDs (R. M. Bagby & Widiger, 2018).

235   Facet analysis and dedicated Big Five questionnaires have been used to solve issues like

236 those mentioned in the last paragraph. We propose to base such research on a broader facet

237 basis. To this end we suggest a general instrument to cover a broad number of facets which

238 could aim for fine grained assessments.

239 **1.5. This study**

240   We present in this paper an instrument for personality assessment which aims to cover

241 the need for an internationally usable, open source, and differentiated measure at the facet

242 level. Two studies are presented, for each one inspects the factor structure of the instrument

243 in a different sample drawn from a different culture (American vs. German). Measurement

244 invariance across samples will be examined. Internal consistency and test-criterion

245 correlations will be estimated for all scores. To sum up, the aim for this research project was

246 to provide an instrument that can be used in non-clinical but also in clinical research which

247 emphasizes the facet level of the Big Five.

2. Methods

249 Two different studies are presented in this work. The first study uses a sample drawn

250 from the USA bachelor student population. The aim was to detect and confirm a model that

251 maximizes the facet space below the Big Five domains. Exploratory factor analysis (EFA)

252 was used to identify the number of facets per domain. A confirmatory factor analysis (CFA)

253 per facet was specified in order to confirm the item - facet relationship. Finally, an

254 exploratory strucutural equation model (ESEM) was applied to test a full model in which

255 the facets serve as indicators of the Big Five domains. ESEM has gained reputation in the

256 personality field, where the independent cluster model may not capture the complexity of the

257 constructs measured (Marsh et al., 2010).

258 The second sample is a sample representative for the German speaking population of

259 Germany, Austria and Switzerland. The aim for the second study was to replicate the

260 structure found in study one, plus assess the degree of measurement invariance of the

261 proposed model.

Study 1 - US-American Sample

263 **Participants.** The sample consisted of 722 American undergraduate students

264 (59.30% male) who participated voluntarily. The mean age was 21.60 years (SD = 5.90).

265 Students were emailed a link to a computerized assessment battery that included the IPIP

266 items as well as several other tests not reported in this paper. The data set was randomly

267 split into two equally sized samples. Both samples were matched in relation to missing

268 values, outliers and extreme values. In Sample 1 the mean age was 21.80 years (SD= 6.30),

269 in Sample 2 the mean age was 21.50 years (SD=5.60).

Measures

271   **Items from the International Personality Item Pool (IPIP).**   Altogether, 525

272 items from the *International Personality Item Pool* (IPIP) were used to measure

273 Neuroticism, Extraversion, Openness (to experience), Agreeableness and Conscientiousness.

274 The IPIP is an open source database of personality items, which was launched in 1996, and

275 contains over 2000 items (L. R. Goldberg et al., 2006). Participants were asked to rate

276 themselves on typical behaviors or reactions on a 5-point Likert scale, ranging from 1 ("Not

277 all like me") to 5 ("Very much like me").

278   The item selection was part of a different project and the procedure has been explained

279 in detail in the appendix of a study by MacCann, Duckworth, and Roberts (2009). That

280 study also contains part of the sample used here. However, the current data set contains

281 more participants.

282   **Satisfaction With Life (SWL).**   Measured with a 5 item composite defined in

283 Diener, Emmons, Larsen, and Griffin (1985), answered in a 7 point Likert-type scale ranging

284 from 1 (*strongly disagree*) to 7 (*strongly agree*). The items are: a)"In most ways my life is

285 close to ideal", b) "The conditions of my life are excellent", c) "I am satisfied with my life",

286 d) "So far I have gotten the important things in my life", and e) "If I could live my life over,

287 I would change almost nothing". Psychometric properties have been reported excellent. (In

288 which moment have SWLS been measured? just at the same time point than personality?)

289   **GPA.**   Grade Point Averages measured in high school, university, and in cc.

290   **SAT.**

291   **ACT.**

292   **Absences from class.**   As a behavioral measure absence from class was asked to
293 report from subjects. ABS2 ABS4 what are the differences?

294 **2.1.3. Procedure**

295   **EFA with subsample 1.**   To determine the number of possible facets per domain
296 Velicer (1976) Minimum Average Partial (MAP) method and Horn (1965) parallel analysis
297 (PA) were employed for every domain. Based on these results an Exploratory Factor
298 Analysis (EFA) was calculated for each domain via Mplus using a geomin rotation (Quelle)
299 and a Maximum Likelihood estimator (ML). The decision for the preferred number of facets
300 per domain was based partly on comparing model fits (CFI, RMSEA, SRMR). More
301 importantly though was the interpretability of the facet solution. To this end, facet solutions
302 from other personality measures were looked and compared to the found facet structure. If
303 there were important parts missing to present the domain with regards to content, new
304 facets were added a posteriori.

305   **CFA and ESEM with subsample 1.**   To confirm the structure of facets the EFAs
306 delivered, multiple CFAs were calculated via Mplus. In a first step, measurement models
307 were estimated for each of the facets. To obtain balance between the facets, the items were
308 reduced to five per facet based on item content and loading pattern. In a second step, the
309 estimations for the measurement models on facet levels were repeated via CFA. For both
310 steps estimators were WLSMV (Weighted Least Squares adjusted for Means and Variances).
311 Aim was to ensure an optimal breadth and sufficient reliability. In a final model, all five
312 domain structural models were integrated using ESEM (Asparouhov & Muthén, 2009).
313 Marsh et al. (2010) could show that ESEM fits personality data better and results in
314 substantially more differentiated factors than CFA. All facets were allowed to load on all

315 domains. If there would show up facets that do not significantly load on the intended

316 domain, this facets would get eliminated subsequently. The estimators used were ML

317 !WLSMV?, factor scores from the facet CFAs were used as indicators and the rotation was

318 oblique (using Geomin). Model fit was determined based on the guide lines by Hu and

319 Bentler (1999) as well as Beauducel and Wittmann (2005). Consequently, to consider a good

320 fit of a proposed model, the Comparative Fit Index (CFI) should be at or over .95, the

321 Standardized Root Mean Squared Residual (SRMR) smaller than .08 and the Root Mean

322 Square Error of Approximation (RMSEA) smaller than .06. For the ESEM models we

323 compared our results with the findings by Marsh et al. (2010).

324 **Criterion validity evidence.** To examine the nomological structure of the facets

325 and domains to external constructs, a set of linear models and correlations were fitted. We

326 describe here a set of hypothesis prompted by other's research in the interplay between

327 personality and the external criteria which we had access for this work.

328 SWL was observed to be best predicted by the *Depression* facet of the NEO-PI-R and

329 IPIP-NEO Neuroticism and NEO-PI-R's *Positive emotions* or IPIP-NEO's *Cheerfulness* in

330 the Extraversion domain (Schimmack, Oishi, Furr, & Funder, 2004). Correlations in the

331 mentioned study ranged in a longitudinal design from $r = -.57$ to $r = -.49$ for the first and

332 from $r = .51$ to $r = .38$ for the second and third. We hypothesize that the facets *Confidence*

333 (N2) and *Positive attitude* (E4) developed in our instrument will behave similarly. To explore

334 this hypothesis we fitted a linear model that included N2 and E4 as predictors. Furthermore

335 we fitted a stepwise regression with all the facets to find covered relations. In a third model

336 we compared the power of E4 and N2 with their respective domains, Extraversion and

337 Neuroticism.

338 Regarding academic performance, Conscientiousness has been reported as the most

339 consistent personality predictor at the domain level. In the meta-analysis by O'Connor and

340 Paunonen (2007) the corrected correlation between academic achievement and

Conscientiousness was $r = .24$. However, this relationship might not be linear according to other authors who reported inverted-U relations (Cucina & Vasilopoulos, 2005). Being the relationship between the other Big Five domains and academic achievement less clear, facet level analysis becomes important. *Achievement-striving*, *Self-discipline* and *Dutifulness* are the best predictors of academic performance under the Conscientiousness domain, according to the revision by O'Connor and Paunonen (2007). Its correlation coefficients range from $r = .15$ to $r = .39$, from $r = .18$ to $r = .46$, and from $r = .25$ to $r = .46$ respectively. Openness' facets yield unconclusive patterns at the domain level, as we pointed out in the introduction. Openness to ideas can be a facilitator towards better GPA, wih correlations being found $r = .22$ in Dollinger and Orf (1991) and $r = .15$ in Ziegler et al. (2010), although this finding has failed to be reproduced in some other research (Chamorro-Premuzic & Furnham, 2003; De Fruyt & Mervielde, 1996). Context dependent characteristics may be influencing this lack of replicability (Ziegler et al., 2014). In the other hand, Openness to fantasy has found to yield a negative relation to GPA $r = -.22$ for men, whereas Aesthetics yielded a similar relationship with GPA for women $r = -.19$ (De Fruyt & Mervielde, 1996). Concerning Extraversion, gregariousness has been found to correlate negatively with academic achievement, with $r = -.20$ (Chamorro-Premuzic & Furnham, 2003); activity has yielded contratictory results, being positively correlated in the De Fruyt and Mervielde (1996) analysis ($r = .26$) but negatively in the Chamorro-Premuzic and Furnham (2003) experiment $r = -.24$. Results found for the Impulsivity and Anxiety facets of Neuroticism have been more clear, with correlation ranging from $r = -.14$ to $r = -.26$ for Impulsivity and $r = -.29$ for Anxiety. Agreebleness' facets have failed to yield significant correlations with GPA, although some of them may be important for certain job performance (Ziegler et al., 2014). Say something about Noftle Robins here.

　　As stated previously, Absences from school was the behavioral variable chosen to be controlled in this study. Kok, Plaisier, Smit, and Penninx (2017) inspected the interplay of abseentism from work and personality, discovering no relation with NEO-PI-R Conscientiousness, but a significant (number) correlation with the *Mastery* scale developed

by (see Kok work). This may be another case were the analysis at the domain levels gets

masked by facets pointing in opposite directions. Facet analysis may disentangle clearer

relations with personality. The *Mastery* scale is similar in content to our . . . ., (see . . . for

the Mastery scale items). Therefore we hypothesize that . . . will perform similarly to

Mastery in predicting abseentism. To that means we run a model to predict absences from

Conscientiousness and . . . in a stepwise regression. Aferwards we run a stepwise regression

with all the facets to explore additional dependencies.

explore this deeper with intelligence. literature!

Results

Results of EFA.   In *Table 2* model fits for the chosen facet model for each domain

are shown, as well as Eigenvalues and results from MAP and PA test. To ensure the

homogeneity of the facets and to reduce the risk of cross domain loadings, items with factor

loadings less than .30 were eliminated. This was only done when item content was also

judged as being non-central to the domain in question (Ziegler et al., 2014).

< Table 2 here>

According to the exploratory model, Agreeableness consists of eight facets after two

facets were eliminated due to weakly loading and inconsistent items. The remaining facets

were named Appreciation, Integrity, Low Competitiveness, Readiness to Give Feedback,

Search for Support, Good Faith, Genuineness and Altruism.

Conscientiousness consists of nine facets after one facet with item factor loadings less

than .30 was excluded, they are: Dominance, Persistence, Self-discipline, Task planning,

Goal orientation, Carefulness, Orderliness, Wish to work to capacity and Productivity.

390   Extraversion is formed by nine facets. A new facet (Energy) was added in order to tap

391   better the physical component of Extraversion, which was missing in the eight facet solution.

392   The facets are Sociability, Readiness to take risks, Wish for affiliation, Positive attitude,

393   Forcefulness, Communicativeness, Humor, Conviviality and Energy.

394   Neuroticism (interpreted here as emotional stability) consists of seven facets. One facet

395   was dropped due to poor interpretability, and was therefore not included in the subsequent

396   analyses. The final set of facets are named Equanimity, Confidence, Carefreeness, Mental

397   balance, Drive, Emotional robustness and Self-attention.

398   Openness to experience comprises nine facets. One facet was identified as a method

399   factor and eliminated, because it solely contained negatively formulated items and no

400   coherent underlying trait could be identified. Furthermore another facet (Intellect) was

401   added, because the remaining facets lacked an intellectual content. The facets of Openness

402   are named Creativity, Wish for variety, Open-mindedness, Interest in reading, Artistic

403   interests, Wish to analyze, Willingness to learn, Sensitivity and Intellect.

404   The items to each facet are listed in the appendix (A).

405   **Results of CFA and ESEM.**   All measurement models for the facets fitted well,

406   results are summarized in *Table 3*. In this table both models with five items only and models

407   with all items are presented with their respective model fit. The 5-item facets normally

408   outperform the models including all items regarding model fit.

409   < Table 3 here caption="Model fit for each facet")>

410   The ESEM of the final model with all five domains yielded an acceptable fit (Marsh et

411   al., 2010): CFI = .87, RMSEA = .072, SRMR = .036. As it can be seen in *Table 4* nearly all

412   facets loaded significantly on their intended domain. Some cross loadings emerged as is

413 typical for ESEM procedures.

414   Reliability?!

415   Reliabilities for the 5 item facets were calculated. The mean alpha for the

416 Agreeableness facets was 0.68, and the mean omega was 0.69. The mean alpha for the

417 Conscientiousness facets was 0.68, and the mean omega was 0.70. The mean alpha for the

418 Openness facets was 0.76, and the mean omega was 0.77. The mean alpha for the

419 Neuroticism facets was 0.68, and the mean omega was 0.69. The mean alpha for the

420 Extraversion facets was 0.72, and the mean omega was 0.74.

421   < Table 4 here caption="ESEM factor scores")>

422   **Criterion validity evidence.**   Our first hypothesis concerning external criteria

423 involved *Confidence* (N2) and *Positive attitude* (E4), as the most important predictors of

424 SWL. Our results, in line with Schimmack et al. (2004), showed that both facets were the

425 most salient predictors of the factor in a stepwise regresssion, and that they explained 0.34%

426 of the factor. The final model reached with the stepwise procedure explained 0.41% of the

427 factor variance. N2 and E4 outperformed Neuroticism and Extraversion, who failed to be

428 significant predictors in a stepwise model which included these four independent variables.

429   Bivariate correlations of the facets with the external criteria are shown in *Table 5*. The

430 facets N2 (Confidence, r = 0.53) and E4 (Positive attitude, r = 0.49) show the highest

431 correlations with life satisfaction respectively. The SWL scale was also correlated with facets

432 such as N4 (Mental balance, r = 0.25) and N5 (Drive, r = 0.27) in the Neuroticism /

433 Emotional stability realm. C5 (Goal orientation, r = 0.28) and C2 (Persistence, r = 0.27) in

434 Conscientiousness. E1 (Sociability, r = 0.26) and E9 (Energy, r = 0.25) in the Extraversion

435 domain. O9 (Intellect, r = 0.24) and O3 (Open-mindedness, r = 0.22) in Openness and A6

436 (Good faith, r = 0.25) in the Agreeableness domain.

437   Regarding the academic performance criteria (GPA, SAT and ACT), the Openness

438 facets O4 (Interest in reading), O6 (Wish to analyze) and O9 (Intellect) yield the most

439 consistent correlations. Interestingly, O4 correlates directly with the reading subtests of SAT

440 (r = 0.25) and ACT (r = 0.2) and shows a negligible relationship with the math (r = 0.06 /

441 0.08) subscales.

442   Furthermore, the global GPA scale (assuming cc is for global) correlated with several

443 Conscientiousness and Agreeableness facets. C9 (Productivity, r = 0.4), C5 (Goal

444 orientation, r = 0.38) and C4 (Task planning, r = 0.35) yield the higher correlations with

445 overall GPA respectively in the Conscientiousness domain, and A1 (Appreciation, r = 0.32)

446 in the Agreeableness domain.

447   Concerning the behavioral criteria controlled in this study, absence from class, the

448 meaningful correlations unsurprisingly loaded within the facets at the Conscientiousness

449 domain. Particularly the facets C4 (Task planning, r = -0.22 / -0.26), C7 (C6: Carefulness, r

450 = -0.21 / -0.21) and C9 (Productivity, r = -0.21 / -0.24) were the most robust indicators of

451 this criteria.

452   < Table 5 here caption="Criterion correlations" >

453 **Study 2 – German Sample**

454   **Participants.** The representative sample consisted of 387 German speakers (49.10%

455 male) with a mean age of 45.60 years (SD = 17.50). The data was collected in a test center.

456   **Measures.** The five items per facet derived from Study 1 were translated and

457 back-translated by bilingual experts, creating a German version of the measure used there.

458 The translated items can be found in appendix B.

459 **Procedure**

460   **Step 1 – Examining the structure.**   To check the facet structure Study 1

461 delivered, multiple confirmatory factor analyses were calculated via Mplus following an

462 analogue procedure to Study 1. First, measurement models were estimated for all facets,

463 using WLSMV as the estimator. Model fit was determined based on the guide lines

464 mentioned above. In a final model, all five domain structural models were integrated using

465 ESEM.

466   **Step 2 – Testing for measurement invariance.**   In a next step, measurement

467 invariance between German and US samples was examined. We followed the procedure

468 suggested by Sass (2011) and tested configural, factorial and strong factorial invariance. The

469 cutoffs suggested by Chen (2007) were applied to compare model fits. According to this

470 configural measurement invariance can be assumed when the same item is associated with

471 the same factor in each domain, while the factor loadings can differ. If the factor loadings of

472 each item would not differ between the samples, factorial measurement invariance can be

473 assumed. Strong factorial measurement invariance can be assumed when on top of that the

474 intercepts of each item are equal. The limit to factorial measurement invariance was set to Δ

475 CFI < .01, Δ RMSEA < .015 and Δ SRMR < .03, at which the limit to strong factorial

476 measurement invariance was set to Δ CFI < .01, Δ RMSEA < .015, Δ SRMR < .01 (Chen,

477 2007).

478 **Results**

479   **Results of CFA.**   The measurement models of the American sample were replicated

480 for the reduced number of items per facet. Model fits can also be seen in *Table 3*. The

481 ESEM with all five domains showed a relatively good fit to the data with CFI = .82,

482 RMSEA = .078, SRMR = .044. *Table 6* shows the ESEM factor loadings for the German

483 sample. All facets loaded significantly on their intended domain.

484   **Results of MI.**   For analyzing measurement invariance the latest facet model

485 structure (with additional facets) was taken. The results are shown in Table 7. Configural

486 measurement invariance could be shown for the facets Appreciation of others,

487 Superiority/Grandiosity, Need to be liked, Crybabiness, Manipulation, Altruism (facets of

488 Agreeableness), Perseverance, Task Planning, Goal-orientation/Achievement striving,

489 Preferred Load, Procrastination (facets of Conscientiousness), Assertiveness,

490 Sociability/Gregariousness, Activity (facets of Extraversion), Irritability, Self-serving

491 Attention (facets of Neuroticism), Self-attributed Inginuity, Openness to actions and

492 activities, Openmindedness/Judgement, Love of Learning, Openness to feelings and Intellect

493 (facets of Openness).

494   Factorial measurement invariance could be shown for the facets Meanness, Trust

495 (facets of Agreeableness), Control of others, Lack of (Self-) Control, Deliberation/Caution,

496 Lack of Tidiness/Order (facets of Conscientiousness), Sensation Seeking, Reclusiveness,

497 Emotionality, Humor (facets of Extraversion), Depression, Anxiety, Self-assuredness,

498 Lethargia, Sentimentality (facets of Neuroticism), Openness to reading, Openness to arts and

499 Need for cognition (facets of Openness).

500   The only facet with strong factorial measurement invariance was Shyness, a facet of

501 Extraversion

Discussion

⁵⁰² refers to line number.

502   **Discussion**

503   We have presented in this work an open-access instrument for personality assessment

504   within the Big Five framework, which showed evidences of factorial validity in two different

505   cultures and maximized the space set of facets encompassed. With a modest number of

506   items (202) by comparison with the most influential Big Five inventories presented in *Table*

507   *1*, we have reached to a large set of facets which mostly show a robust factorial validity in

508   both studies, as shown in *Table 3*.

509   The Big Five solution has been recognized as the most replicable model for personality

510   inventories, reaching a hallmark of consensus in personality science for the last decades.

511   However, some researchers have pointed out that while the Big Five has repeatedly been

512   found when fitting EFA to personality data, its replicability under CFA procedures has been

513   more elusive (R. R. McCrae, Zonderman, Costa, Bond, & Paunonen, 1996). The constriction

514   of the common independent cluster solution, where cross-loadings are restricted to zero, may

515   suppose a rather strong assumption for personality trait inventories (Marsh et al., 2010).

516   The idea of facets, or habits, being influenced by more than one domain can definitely make

517   some sense. ESEM helps overcoming this assumption and provides a measure about how well

518   the Big Five solution adjusts to the data. Using this procedure, the degree of integration of

519   our proposed set of facets to the Big Five factor solution has been solid enough according to

520   the cut-off values proposed by Marsh et al. (2010). The number of significant cross-loadings

521   in the ESEM models has not been large either, advocating a good discriminant validity.

522   The instrument presented in this work covers all the "core" facets proposed by

523   Christopher J. Soto and John (2009), either directly or indirectly. The *Energy* construct in

524   Extraversion is literally covered by a three-item facet in our instrument, whereas the

525   *Assertiveness* construct has been tapped by items belonging to the *Wish for affiliation*,

526   *Communicativeness* and *Conviviality* facets. *Altruism* is directly reflected in a five-item facet,

⁵²⁷ while the *Compliance* construct is reflected by our *Good faith* facet. The *Order* and

⁵²⁸ *Self-discipline* constructs proposed by Christopher J. Soto and John (2009) are mirrored by

⁵²⁹ dedicated facets in our instrument. The *Anxiety* and *Depression* constructs are mirrored by

⁵³⁰ the facets *Mental balance* and *Emotional robustness*, respectively. For the *Openess*

⁵³¹ dimension, the *Aesthetic* contruct is covered by our facet *Artistic interest*, while the *Ideas*

⁵³² construct has been reflected by both the *Open-mindedness* and the *Wish to analyze* facets.

⁵³³ The two-per-facet components proposed by DeYoung et al. (2007) were also being tapped by

⁵³⁴ the set of facets in our inventory.

⁵³⁵   The instrument covers most of facets proposed by the most influential Big Five

⁵³⁶ measures as seen in *Table 1*. The most salient differences are related to the HEXACO model,

⁵³⁷ which entails a six factor solution with a slightly different theoretical conceptualization (Lee

⁵³⁸ & Ashton, 2006). Most notably

⁵³⁹   Although these facets are not being covered directly in our inventory, components of

⁵⁴⁰ facets from distinct domains in our model retain a glimpse of the missing facets. This

⁵⁴¹ underlies the importance of allowing cross-loadings for trait personality data. Let's use the

⁵⁴² example of *Patience*, a facet proposed in the HEXACO model for the Agreeableness domain

⁵⁴³ which is not covered in our instrument, nor in the other three Big Five inventories which

⁵⁴⁴ have been revised. Although patience, there is a notion of a patient trait within the

⁵⁴⁵ Self-discipline facet in the Conscientiousness domain, specially with items such as "I rush

⁵⁴⁶ into things" or "I act impulsively when something is bothering me" (See appendix A). In

⁵⁴⁷ fact, Self-discipline has important cross-loadings with Agreeableness in both samples ($\lambda =$

⁵⁴⁸ .256 in the USA sample and $\lambda = .341$ in the german sample).

⁵⁴⁹   In addition we included even more facets.

⁵⁵⁰   In addition, evidences for external criteria validity were attained.

⁵⁵¹   We have collected some criterion validity evidences. Like bla bla bla. Nonetheless the

multi - facetted nature of the instrument makes forthcoming evidences for criterion and predictive validity promising.

One limitation is the sample used. Students are not a representative population of society and results may not be generalized.

Future directions are to provide a tool with the subset of items for public use. Gather community sample, from more cultures and test the extent of the universality of the instrument. And use the instrument to predict important life outcomes so the links between specific behaviors and facets become richer.

⁵⁶⁰   Remove this page. This is used to include the tables' references into the bibliography.

⁵⁶¹   Brick and Lewis (2014); Gaughan, Miller, and Lynam (2012); Leone, Chirumbolo, and

⁵⁶² Desimoni (2012); Mcabee, Oswald, and Connelly (2014); Gaughan, Miller, Pryor, and Lynam

⁵⁶³ (2009); Noftle and Shaver (2006); R. M. Bagby, Taylor, and Parker (1994); Schimmack, Furr,

⁵⁶⁴ and Funder (1999); Wakabayashi, Baron-Cohen, and Wheelwright (2006); Shaver and

⁵⁶⁵ Brennan (1992); Ruiz, Pincus, and Dickinson (2003); Mccrae, Kurtz, Yamagata, and

⁵⁶⁶ Terracciano (2011); Rosander, Bäckström, and Stenberg (2011); K. K. McAdams and

⁵⁶⁷ Donnellan (2009); Siddiqui (2011); Hagger-Johnson and Whiteman (2007)

⁵⁶⁸   Ziegler et al. (2014)

References

Allport, G. W., & Odbert, H. S. (1936). Trait-names: A psycho-lexical study. *Psychological Monographs*, *47*(1), i–171. doi:10.1037/h0093360

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders (5th ed.).*

Asparouhov, T., & Muthén, B. (2009). *Exploratory structural equation modeling* (Vol. 16, pp. 397–438). doi:10.1080/10705510903008204

Bagby, R. M., & Widiger, T. A. (2018). Five factor model personality disorder scales: An introduction to a special section on assessment of maladaptive variants of the five factor model. *Psychological Assessment*, *30*(1), 1–9. doi:10.1037/pas0000523

Bagby, R. M., Taylor, G. J., & Parker, J. D. (1994). The twenty-item Toronto Alexithymia scale-II. Convergent, discriminant, and concurrent validity. *Journal of Psychosomatic Research*, *38*(1), 33–40. doi:10.1016/0022-3999(94)90006-X

Beauducel, A., & Wittmann, W. (2005). Simulation study on fit indices in confirmatory factor analyses based on data with slightly distorted simple structure. *Structural Equation Modeling*, *12*, 41–75. doi:10.1207/s15328007sem1201

Borgatta, E. (1964). The structure of personality characteristics. *Behavioral Science*, *9*(1), 8–17. doi:10.1007/BF01358190

Brick, C., & Lewis, G. J. (2014). Unearthing the "Green" Personality: Core Traits Predict Environmentally Friendly Behavior. *Environment and Behavior*, *48*(5), 635–658. doi:10.1177/0013916514554695

Cattell, R. B. (1956). Second-order personality factors in the questionnaire realm. *Journal*

591   *of Consulting Psychology, 20*(6), 411–418. doi:10.1037/h0047239

592   Chamorro-Premuzic, T., & Furnham, A. (2003). Personality predicts academic performance:

593   Evidence from two longitudinal university samples.

594   doi:10.1016/S0092-6566(02)00578-0

595   Chen, F. F. (2007). Sensitivity of goodness of fit indexes to lack of measurement invariance.

596   *Structural Equation Modeling, 14*(3), 464–504. doi:10.1080/10705510701301834

597   Clark, L. A. (2005). Temperament as a unifying basis for personality and psychopathology.

598   *Journal of Abnormal Psychology, 114*(4), 505–521. doi:10.1037/0021-843X.114.4.505

599   Costa Jr., P. T., & Widiger, T. A. (1994). A description of the DSM-III-R and DSM-IV

600   personality disorders with the five-factor model of personality. *Personality Disorders*

601   *and the Five-Factor Model of Personality.*, (January), 41–56. doi:10.1037/10140-003

602   Costa, P. T., & McCrae, R. R. (1995). Domains and facets: hierarchical personality

603   assessment using the revised NEO personality inventory. *Journal of Personality*

604   *Assessment, 64*(1), 21–50. doi:10.1207/s15327752jpa6401_2

605   Cucina, J. M., & Vasilopoulos, N. L. (2005). Nonlinear personality-performance relationships

606   and the spurious moderating effects of traitedness. *Journal of Personality, 73*(1),

607   227–259. doi:10.1111/j.1467-6494.2004.00309.x

608   De Fruyt, F., & Mervielde, I. (1996). Personality and interests as predictors of educational

609   streaming and achievement. *European Journal of Personality, 10*(5), 405–425.

610   doi:10.1002/(SICI)1099-0984(199612)10:5<405::AID-PER255>3.0.CO;2-M

611   DeYoung, C. G., Quilty, L. C., & Peterson, J. B. (2007). Between Facets and Domains: 10

612   Aspects of the Big Five. *Journal of Personality and Social Psychology, 93*(5),

880–896. doi:10.1037/0022-3514.93.5.880

Diener, E., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The Satisfaction With Life Scale. *Journal of Personality, 49*(1), 71–75. doi:10.1207/s15327752jpa4901

Diener, E., Oishi, S., & Lucas, R. E. (2003). Personality, culture, and subjective well-being. doi:10.1146/annurev.psych.54.101601.145056

Digman, J. M. (1990). Personality Structure: Emergence of the Five-Factor Model. *Annual Review of Psychology, 41*(1), 417–440. doi:10.1146/annurev.ps.41.020190.002221

Dollinger, S. J., & Orf, L. A. (1991). Personality and performance in "personality": Conscientiousness and openness. *Journal of Research in Personality, 25*(3), 276–284. doi:10.1016/0092-6566(91)90020-Q

Fiske, D. W. (1949). Consistency of the factorial structures of personality ratings from different sources. *Journal of Abnormal and Social Psychology, 44*(3), 329–344. doi:10.1037/h0057198

Galton, F. (1884). The Measurement of Character. doi:10.1037/11352-058

Gaughan, E. T., Miller, J. D., & Lynam, D. R. (2012). Examining the Utility of General Models of Personality in the Study of Psychopathy: A Comparison of the HEXACO-PI-R and NEO PI-R. *Journal of Personality Disorders, 26*(4), 513–523. doi:10.1521/pedi.2012.26.4.513

Gaughan, E. T., Miller, J. D., Pryor, L. R., & Lynam, D. R. (2009). Comparing two alternative measures of general personality in the assessment of psychopathy: A test of the NEO PI-R and the MPQ. *Journal of Personality, 77*(4), 965–995. doi:10.1111/j.1467-6494.2009.00571.x

Goldberg, L. R., Johnson, J. A., Eber, H. W., Hogan, R., Ashton, M. C., Cloninger, C. R., &

Gough, H. G. (2006). The international personality item pool and the future of public-domain personality measures. *Journal of Research in Personality*, *40*(1), 84–96. doi:10.1016/j.jrp.2005.08.007

Hagger-Johnson, G. E., & Whiteman, M. C. (2007). Conscientiousness facets and health behaviors: A latent variable modeling approach. *Personality and Individual Differences*, *43*(5), 1235–1245. doi:10.1016/j.paid.2007.03.014

Horn, J. L. (1965). A rationale and test for the number of factors in factor analysis. *Psychometrika*, *30*(2), 179–185. doi:10.1007/BF02289447

Hu, L. T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling*, *6*(1), 1–55. doi:10.1080/10705519909540118

Kok, A. A., Plaisier, I., Smit, J. H., & Penninx, B. W. (2017). The impact of conscientiousness, mastery, and work circumstances on subsequent absenteeism in employees with and without affective disorders. *BMC Psychology*, *5*(1), 1–10. doi:10.1186/s40359-017-0179-y

Krueger, R. F., Derringer, J., Markon, K. E., Watson, D., & Skodol, A. E. (2012). Initial construction of a maladaptive personality trait model and inventory for DSM 5 Initial construction of a maladaptive personality trait model and inventory for DSM-5. *Psychological Medicine*, *42*(09), 1872–1890. doi:10.1017/S0033291711002674

Lee, K., & Ashton, M. C. (2006). Further assessment of the HEXACO personality inventory: Two new facet scales and an observer report form. *Psychological Assessment*, *18*(2), 182–191. doi:10.1037/1040-3590.18.2.182

Lee, K., & Ashton, M. C. (2016). Psychometric Properties of the HEXACO-100.

659   *Assessment, 1-15.* doi:10.1177/1073191116659134

660   Leone, L., Chirumbolo, A., & Desimoni, M. (2012). The impact of the HEXACO personality

661   model in predicting socio-political attitudes: The moderating role of interest in

662   politics. *Personality and Individual Differences, 52*(3), 416–421.

663   doi:10.1016/j.paid.2011.10.049

664   Lounsbury, J. W., Sundstrom, E., Loveland, J. L., & Gibson, L. W. (2002). Broad versus

665   narrow personality traits in predicting academic performance of adolescents. *Learning*

666   *and Individual Differences, 14*(1), 67–77. doi:10.1016/j.lindif.2003.08.001

667   MacCann, C., Duckworth, A. L., & Roberts, R. D. (2009). Empirical identification of the

668   major facets of Conscientiousness. *Learning and Individual Differences, 19*(4),

669   451–458. doi:10.1016/j.lindif.2009.03.007

670   Markon, K. E., Quilty, L. C., Bagby, R. M., & Krueger, R. F. (2013). The Development and

671   Psychometric Properties of an Informant-Report Form of the Personality Inventory

672   for DSM-5 (PID-5). *Assessment, 20*(3), 370–383. doi:10.1177/1073191113486513

673   Marsh, H. W., Lüdtke, O., Muthén, B., Asparouhov, T., Morin, A. J., Trautwein, U., &

674   Nagengast, B. (2010). A New Look at the Big Five Factor Structure Through

675   Exploratory Structural Equation Modeling. *Psychological Assessment, 22*(3), 471–491.

676   doi:10.1037/a0019227

677   Mcabee, S. T., Oswald, F. L., & Connelly, B. S. (2014). Bifactor Models of Personality and

678   College Student Performance: A Broad Versus Narrow View. *European Journal of*

679   *Personality, 28*(6), 604–619. doi:10.1002/per.1975

680   McAdams, D. P., & Pals, J. L. (2006). A new Big Five: Fundamental principles for an

681   integrative science of personality. *American Psychologist, 61*(3), 204–217.

682   doi:10.1037/0003-066X.61.3.204

683   McAdams, K. K., & Donnellan, M. B. (2009). Facets of personality and drinking in first-year

684   college students. *Personality and Individual Differences*, *46*(2), 207–212.

685   doi:10.1016/j.paid.2008.09.028

686   Mccrae, R. R., Kurtz, J. E., Yamagata, S., & Terracciano, A. (2011). Internal consistency,

687   retest reliability and their implications for personality Scale Validity. *Personality and*

688   *Social Psychological Bulletin*, *15*(1), 28–50. doi:10.1177/1088868310366253.Internal

689   McCrae, R. R., Zonderman, A. B., Costa, P. T., Bond, M. H., & Paunonen, S. V. (1996).

690   Evaluating replicability of factors in the tevised NEO personality inventory:

691   Confirmatory factor analysis versus procrustes rotation. *Journal of Personality and*

692   *Social Psychology*, *70*(3), 552–566. Retrieved from http://www.sciencedirect.com/

693   science/article/B6X01-46SGF6X-B/2/cfbcc79b23f57818759b3ae2b7f949b5

694   Noftle, E. E., & Shaver, P. R. (2006). Attachment dimensions and the big five personality

695   traits: Associations and comparative ability to predict relationship quality. *Journal*

696   *of Research in Personality*, *40*(2), 179–208. doi:10.1016/j.jrp.2004.11.003

697   Norman, W. T. (1967). 2800 Personality Trait Descriptors - Normative Operating

698   Characteristics for a University Population, 1–279.

699   Ozer, D. J., & Benet-Martínez, V. (2006). Personality and the Prediction of Consequential

700   Outcomes. *Annual Review of Psychology*, *57*(1), 401–421.

701   doi:10.1146/annurev.psych.57.102904.190127

702   O'Connor, M. C., & Paunonen, S. V. (2007). Big Five personality predictors of

703   post-secondary academic performance. *Personality and Individual Differences*, *43*(5),

704   971–990. doi:10.1016/j.paid.2007.03.017

705   Paunonen, S. V., & Ashton, M. C. (2001). Big Five Predictors of Academic Achievement.

706   *Journal of Research in Personality*, *35*(1), 78–90. doi:10.1006/jrpe.2000.2309

707   Reynolds, S. K., & Clark, L. A. (2001). Predicting dimensions of personality disorder from

708   domains and facets of the Five-Factor Model. *Journal of Personality*, *69*(2), 199–222.

709   doi:10.1111/1467-6494.00142

710   Roberts, B. W., Kuncel, N. R., Shiner, R., Caspi, A., & Goldberg, L. R. (2007). The Power

711   of Personality. *Perspectives on Psychological Science*, *2*(4), 313–345.

712   doi:10.1111/j.1745-6916.2007.00047.x

713   Rosander, P., Bäckström, M., & Stenberg, G. (2011). Personality traits and general

714   intelligence as predictors of academic performance: A structural equation modelling

715   approach. *Learning and Individual Differences*, *21*(5), 590–596.

716   doi:10.1016/j.lindif.2011.04.004

717   Ruiz, M. A., Pincus, A. L., & Dickinson, K. A. (2003). NEO PI-R predictors of alcohol use

718   and alcohol-related problems. *Journal of Personality Assessment*, *81*(3), 265–270.

719   doi:10.1207/S15327752JPA8103

720   Samuel, D. B., & Widiger, T. A. (2008). A meta-analytic review of the relationships between

721   the five-factor model and DSM-IV-TR personality disorders: A facet level analysis.

722   *Clinical Psychology Review*, *28*(8), 1326–1342. doi:10.1016/j.cpr.2008.07.002

723   Sass, D. A. (2011). Testing measurement invariance and comparing latent factor means

724   within a confirmatory factor analysis framework. *Journal of Psychoeducational*

725   *Assessment*, *29*(4), 347–363. doi:10.1177/0734282911406661

726   Saulsman, L. M., & Page, A. C. (2004). The five-factor model and personality disorder

727   empirical literature: A meta-analytic review. *Clinical Psychology Review, 23*(8),

728   1055–1085. doi:10.1016/j.cpr.2002.09.001

729 Schimmack, U., Furr, R. M., & Funder, D. C. (1999). Personality and Life Satisfaction : A

730   Facet-Level Analysis, 1062–1075. doi:10.1177/0146167204264292

731 Schimmack, U., Oishi, S., Furr, R. M., & Funder, D. C. (2004). Personality and life

732   satisfaction: A facet-level analysis. *Personality and Social Psychology Bulletin, 30*(8),

733   1062–1075. doi:10.1177/0146167204264292

734 Seeboth, A., & Mõttus, R. (2018). Successful explanations start with accurate descriptions:

735   Questionnaire items as personality markers for more accurate prediction and mapping

736   of life outcomes. *Journal of Personality.* doi:10.17605/OSF.IO/U65GB

737 Shaver, P. R., & Brennan, K. A. (1992). Attachment Styles and the "Big Five" Personality

738   Traits: Their Connections With Each Other and With Romantic Relationship

739   Outcomes. Society for Personality; Social Psychology.

740 Siddiqui, K. (2011). Personality influences Mobile Phone usage. *Interdisciplinary Journal of*

741   *. . .*, (1981), 554–563. Retrieved from

742   http://papers.ssrn.com/abstract=2468985{\%}0Ahttp://scholar.google.com/scholar?hl=en{\&}btnG

743 Soto, C. J., & John, O. P. (2009). Ten facet scales for the Big Five Inventory: Convergence

744   with NEO PI-R facets, self-peer agreement, and discriminant validity. *Journal of*

745   *Research in Personality, 43*(1), 84–90. doi:10.1016/j.jrp.2008.10.002

746 Soto, C. J., & John, O. P. (2016). The Next Big Five Inventory (BFI-2): Developing and

747   Assessing a Hierarchical Model With 15 Facets to Enhance Bandwidth ... The Next

748   Big Five Inventory (BFI-2): Developing and Assessing a Hierarchical Model With 15

749   Facets to Enhance Bandwidth , Fidelit, *113*(June), 117–143.

750   doi:10.1037/pspp0000096

751   Tupes, E. C., & Christal, R. E. (1961). Recurrent person-

752   ality factors based on trait rating. *Lackland Air Force Base, TX: USAF*. Retrieved from

753   https://ejwl.idm.oclc.org/login?url=http://search.ebscohost.com/login.aspx?direct=true{\&}db=sih

754   live

755   Velicer, W. F. (1976). Determining the number of components from the matrix of partial

756   correlations. *Psychometrika*, *41*(3).

757   Wakabayashi, A., Baron-Cohen, S., & Wheelwright, S. (2006). Are autistic traits an

758   independent personality dimension? A study of the Autism-Spectrum Quotient (AQ)

759   and the NEO-PI-R. *Personality and Individual Differences*, *41*(5), 873–883.

760   doi:10.1016/j.paid.2006.04.003

761   Widiger, T. A., & Mullins-Sweatt, S. N. (2009). Five-Factor Model of Personality Disorder:

762   A Proposal for DSM-V. *Annual Review of Clinical Psychology*, *5*(1), 197–220.

763   doi:10.1146/annurev.clinpsy.032408.153542

764   Ziegler, M., Bensch, D., Maaß, U., Schult, V., Vogel, M., & Bühner, M. (2014). Big Five

765   facets as predictor of job training performance: The role of specific job demands.

766   *Learning and Individual Differences*, *29*, 1–7. doi:10.1016/j.lindif.2013.10.008

767   Ziegler, M., Danay, E., Schölmerich, F., & Bühner, M. (2010). Predicting Academic Success

768   with the Big 5 Rated from Different Points of View: Self-Rated, Other Rated and

769   Faked. *European Journal of Personality*, *24*(July 2010), 341–355. doi:10.1002/per

770

Table captions