
No Evidence that Social Desirability Response Set Explains the General Factor of Personality and Its Affective Correlates

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In two studies, the General Factor of Personality (GFP) remained intact after controlling for the Lie scale from the Eysenck Personality Questionnaire, despite the Lie Scale showing significant correlations with the GFP defining traits. In Study 1, a re-analysis of 29 self-ratings from 322 pairs of twins (644 individuals) yielded a GFP both before and after controlling for social desirability. In Study 2, four measures of affect in 133 university students loaded on a GFP both before and after controlling for social desirability such that those high on the GFP were high in self-esteem and positive affect and low in depression and negative affect. These results join those from other studies failing to find evidence that the GFP is merely an artifact of evaluative bias.

Keywords: Big One, Big Two, Big 5, General Factor of Personality, personality structure, social desirability, evaluative bias, method variance, self-esteem, affect, depression

In this article we partial out the effects of social desirability response set to test the hypothesis that a General Factor of Personality (GFP) occupies the apex of the multi-factorial hierarchy of personality in the same way that *g* occupies the apex in the organization of cognitive abilities. Individuals high on the GFP have been characterized as altruistic, agreeable, relaxed, conscientious, extraverted, and intellectually open, with high levels of well-being, satisfaction with life, self-esteem, and emotional intelligence. The explanation we favor for the GFP is that, like *g*, it arose through evolutionary selection for adaptive traits that facilitate performance across a wide range of contexts (Rushton, Hur, & Bons, 2008). The main alternative interpretation of the GFP is that it is an artifact of evaluative bias and scale construction (Anusic et al., 2009; Ashton et al., 2009; Bäckström et al., 2009).

A GFP has now been extracted from the inter-scale correlations of over 15 different personality inventories. These include several sets of the Big Five and Big Five alternatives, the California Psychological Inventory, the Comrey Personality Scales, the Dimensional Assessment of Personality Pathology, the

EAS Temperament Scales, the Guilford-Zimmerman Temperament Survey, the Hexaco Personality Inventory, the Millon Clinical Multiaxial Inventory-III, the Minnesota Multiphasic Personality Inventory-2, the Multidimensional Personality Questionnaire, the Personality Assessment Inventory, the Personality Research Form, the Temperament and Character Inventory, and the Trait Emotional Intelligence Questionnaire (Erdle et al., 2010; Figueredo et al., 2004; 2007; Musek, 2007; Rushton et al., 2009; Rushton et al., 2008; Rushton & Irwing, 2008, 2009a, 2009b, 2009c, 2009d; Schermer & Vernon, 2010; Veselka et al., 2009a; Veselka et al., 2009b).

The largest sample consisted of 628,640 Internet respondents who completed the Big Five Inventory (Erdle et al., 2010). One study found the GFP was independent of method variance using a multitrait-multimethod analysis of self-, teacher-, and parent-ratings of 391 13- to 14-year-olds on the Big Five Questionnaire—Children (Rushton et al., 2009). Several cross-national twin studies have found 50% of the variance on the GFP is attributable to genetic influence and 50% to non-shared environmental influence, including from 322 pairs of twins in the UK, 575 pairs of 2- to 9-year-old twins in South Korea, 651 pairs of 14- to 30-year-old twins in Japan, and 386 pairs of 18- to 74-year-old twins in Canada and the US (Rushton et al., 2008; 2009). Moreover, the GFP is largely a *genetic* factor, as indicated by the cross-twin cross trait correlations that give rise to it being greater among MZ twin pairs than among DZ twin pairs, and may be rooted in selection for a broader evolutionary life history (Figueredo & Rushton, 2009). The South Korean twin data showed the GFP had emerged by 2- to 3-years of age (Rushton et al., 2008).

The main alternative interpretation of higher-order factors above the Big Five is that they are artifacts of evaluative bias and scale construction. So far, however,

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the evidence shows that even after controlling for various evaluative biases, higher-order factors remain. For example, Bäckström et al. (2009) found that social desirability contributed to higher-order factors above the Big Five, but that they were still recovered after controlling for it. Schermer and Vernon (2010) found that while the GFP was related to social desirability, it had an independent substantive component.

In another recent study, Anusic et al. (2009) found that halo effects, measured by Self-Esteem and defined as 'overly positive self-evaluations,' contributed to both the Big Five and the Big Two. They also found the Big Two were correlated but they concluded that this was due to self-esteem and they failed to test for an independent GFP. However, Erdle et al. (2009) had already used Anusic et al.'s largest data set, now doubled in size (628,423 vs. 326,641 Internet respondents), and found that when Self-Esteem was partialled out, the Big Two continued to emerge. Subsequently, Erdle et al. (2010) extracted the GFP from the Big Two in this same sample and identified self-esteem as a constituent part of the GFP, thereby replicating Musek's (2007) observation that the GFP is related to self-esteem and positive affect.

The present paper examines further whether the GFP emerges after controlling for evaluative bias. In Study 1, twin data is re-analyzed to extract a GFP from 29 self-rating scales before and after partialing out the Eysenck Lie scale. In Study 2, a GFP is related to self-esteem, depression, and positive and negative affect both before and after controlling for the Lie Scale.

The University of London Twin Study

Method

Data were reanalyzed from Study 2 in Rushton et al. (2008) based on 322 pairs of twins ($N = 644$ individuals; 72% female; mean age = 32 years). That study presented a principal components analysis of 29 self-rating scales made on 5-point scales using the trait names and brief descriptions shown in Table 1 of Rushton et al., which also reported the split-half reliabilities (mean = .79). Other scales such as a Social Responsibility Questionnaire and the Eysenck Personality Questionnaire (EPQ; Eysenck & Eysenck, 1975) had been included in the study but used only in subsidiary analyses. In the reanalysis presented here, the 29 self-ratings are again factor analyzed but this time using principal axis factoring in addition to the principal components procedure used by Rushton et al. (2008), this time too with the EPQ Lie scale introduced as a covariate before extracting the Big Five.

The Lie Scale of the EPQ consists of 21 items scored true or false which measures the tendency to 'fake good.' The scale is described as possessing 'a considerable degree of factorial unity' and to measure 'some stable personality factor which may possibly denote some degree of social naiveté' (Eysenck & Eysenck, 1975, p. 7). An example of a positively keyed item is 'As a child did you do as you were told

immediately and without grumbling' and of a negatively-keyed item, 'Do you sometimes talk about things you know nothing about?' The manual allows that 'it may be possible to correct correlations ... by partialing out L' (p. 8). The manual reports the scale has an internal consistency of .80 and Rushton et al. (2008) found it to be .75.

Results

The Lie scale was found to correlate with the 29 scales from $-.35$ to $+.27$, typically in the direction of their loadings on the GFP in Rushton et al. (2008, Figure 2). For example, the 10 traits with the highest correlations ($P < .01$) were Aggression ($-.35$), Orderly (.27), Enduring (.25), Dominant ($-.22$), Defensive ($-.19$), Objective (.18), Authoritarian ($-.18$), Supporting (.16), Ambitious ($-.16$), and Independent ($-.16$). Covarying the Lie scale reduced but did not substantially alter the previous results (see Table 1). Before controlling for the Lie scale, the mean GFP loading on the Big Five was .45. After controlling for the Lie scale, the mean GFP loading on the Big Five was .44. Although some of the weightings are reduced as a result of using the PAF rather than the PCA, it is the more correct procedure (Jensen, 1998). Agreeableness and Openness provided the highest loadings on the GFP in this study, while Emotional Stability had a surprisingly null loading.

The University of Western Ontario Study

Method

Participants were 133 introductory psychology students (83 women and 50 men) who volunteered to take part in the study. The GFP was measured using the Big Five Inventory, a 44-item self-report measure responded to on a 5-point scale ranging from strongly disagree to strongly agree (BFI: John & Srivastava, 1999). Scores for the GFP were computed by aggregating across the BFI items, with Neuroticism reverse keyed to reflect Emotional Stability. Internal consistency for the GFP from the BFI was .80, with 43 of the 44 items having positive item-remainder correlations. Positive and negative affect were measured using the 20-item Positive and Negative Affect

Table 1

Loadings of Big Five Traits on General Factor of Personality using both Principal Components Analysis and Principal Axis Factoring before and after controlling for the Eysenck Lie Scale

	Uncorrected PCA	Corrected PCA	Uncorrected PAF	Corrected PAF
Openness	.77	.72	.52	.51
Conscientiousness	.53	.54	.27	.32
Extraversion	.63	.65	.57	.54
Agreeableness	.79	.79	.85	.80
Emotional Stability	.21	.13	.02	.01

Note: $N = 644$.

PCA = Principal Components Analysis; PAF = Principal Axis Factor.

Schedule, in which positive and negative adjectives were rated on 5-point scales concerning how one generally feels (PANAS; Watson, Clark, & Tellegen, 1988). Self-esteem was measured by the Single-Item Self-Esteem Scale, in which 'I have high self-esteem' is rated on a 5-point scale ranging from *Strongly disagree* to *Strongly agree* (SISE; Robins, Hendin, & Trzesniewski, 2001). The SISE has been shown to have both high reliability and high validity. Depression was measured using the 13-item Beck Depression Inventory, with items rated on a 4-point scale indicating the severity of symptoms (BDI; Beck & Beamesderfer, 1974). Social desirability was measured by the 9-item Lie scale from the Eysenck Personality Inventory, a measure of the tendency to respond in a socially desirable fashion (EPI-L; Eysenck & Eysenck, 1968).

Results

Bivariate correlation analyses were performed to examine the relationships among the General Factor of Personality, Positive and Negative Affect Schedule, Single-Item Self-Esteem Scale, Beck Depression Inventory and Eysenck Personality Inventory Lie scale (see Table 2). The GFP correlated significantly with Positive Affect (.50), Self-Esteem (.36), Social Desirability (.23), Negative Affect (-.55), and Depression (-.44). Partial correlation analyses were performed to examine the relationships among the GFP, PANAS, SISE, and BDI with EPI-L controlled (see Table 2). The GFP still correlated significantly with Positive Affect (.47), Self-Esteem (.40), Negative Affect (-.53), and Depression (-.44).

Discussion

Data from two studies showed that the General Factor of Personality (GFP) continued to exist after statistical controls for social desirability response set measured by the Eysenck Lie Scale. These results thus join those already reported by Bäckström et al. (2009) and Schermer and Vernon (2010) for social desirability and Erdle et al. (2009) for self-esteem to suggest that higher-order factors above the Big Five remain sub-

stantive after such controls. Although it could be argued that our controls for evaluative bias were not strong enough or sufficiently focused to remove the effect, and if only more stringent controls had been used, the GFP would disappear, it should be noted that several significant correlations were found between the social desirability measures and the other scales. Thus it must be concluded that on the basis of the current evidence, evaluative biases are not a major cause of the higher-order GFP.

The results of Study 2 showed that the affective correlates of the GFP remained significant when social desirability was controlled. The finding that the GFP correlated positively with self-esteem and positive affect and negatively with depression and negative affect conceptually replicated and extended results reported by Musek (2007). The correlates are not simply artifacts of social desirability, but suggest, instead, that the GFP is a broad, pervasive, and important feature of the human personality, perhaps having arisen partly through evolution for socially desirable behavior as well as through processes of socialization and gene-environment transaction.

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Table 2

Bivariate Correlations for the General Factor of Personality, Positive and Negative Affect, Depression, Self-Esteem, and Social Desirability (above diagonal), and Partial Correlations with Social Desirability Controlled (below diagonal)

	GFP	PA	NA	D	SE	SD
GFP	1.00	.50*	-.55*	-.44*	.36*	.23*
PA	.47*	1.00	-.26*	-.33*	.42*	.18*
NA	-.53*	-.23*	1.00	.49*	-.24*	-.16*
D	-.44*	-.32*	.50*	1.00	-.48*	.03
SE	.40*	.43*	-.26*	-.48*	1.00	.05

Note: $N = 133$; * = $P < .05$, one-tailed.

GFP = General Factor of Personality; PA = Positive Affect; NA = Negative Affect; D = Depression; SE = Self-Esteem; and SD = Social Desirability.

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