The General Factor of Personality: A meta-analysis of Big Five intercorrelations and a criterion-related validity study

Dimitri van der Linden a,c,*, Jan te Nijenhuis b, Arnold B. Bakker a

a Erasmus University Rotterdam, Institute of Psychology, The Netherlands
b University of Amsterdam, Department of Psychology, The Netherlands
c Radboud University Nijmegen, Behavioural Sciences Institute, The Netherlands

1. Introduction

A fundamental question in personality research is how many basic dimensions are needed to describe individual differences in personality. Over the past decades researchers have made substantial progress in answering this question by using hierarchical models that group behavioral measures into higher-order clusters. One well-known example of such a hierarchical model is the Big Five (Digman, 1990; Goldberg, 1981; McCrae & Costa, 1999), consisting of Openness to experience, Conscientiousness, Extraversion, Agreeableness, and Neuroticism. These basic factors can explain and predict individual differences over a wide range of settings, including mental health, job satisfaction, and work performance (e.g., Barrick & Mount, 1991; Judge, Heller, & Mount, 2002). Yet, the theoretical discussion about the number of underlying basic personality dimensions remains open. Among the best-known competing hierarchical models are Cattell’s (1967) 16 factors model, Eysenck’s (1947, 1970) Big Three factors of Psychoticism, Extraversion, and Neuroticism (often referred by the acronym, PEN), and the Big Six (see, Ashton & Lee, 2007), which adds a Honesty–Humility dimension to the Big Five.

Digman (1997) and DeYoung, Peterson, and Higgins (2002) made an important contribution to the debate by identifying two meta-factors beyond the Big Five. These meta-factors were later described as Stability and Plasticity (DeYoung et al., 2002). Stability subsumes Conscientiousness, Emotional Stability (the reverse of Neuroticism), and Agreeableness, and refers to the extent to which an individual is consistent in motivation, mood, and social interactions. Plasticity encompasses Extraversion and Openness to experience, and refers to the extent to which a person actively seeks new and rewarding experiences, both intellectual and social.

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Recently, it has been proposed that a General Factor of Personality (GFP) occupies the top of the hierarchical personality structure. We present a meta-analysis (K = 212, total N = 144,117) on the intercorrelations among the Big Five personality factors (Openness, Conscientiousness, Extraversion, Agreeableness, and Neuroticism) to test for the existence of a GFP. In addition, we report a multi-method validity study testing the relationship between the GFP and supervisor-rated job performance. The meta-analysis provides supporting evidence for the two meta-factors Stability and Plasticity (or α and β, respectively) and a GFP at the highest hierarchal level. The validity study indicated that the GFP has a substantive component as it is related to supervisor-rated job performance.

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Although showing the existence of a GFP in personality measures is an important step, it does not necessarily reveal information about the theoretical or practical relevance of such a construct. Therefore, in Study 2 we test whether the GFP is related to job performance, as assessed by means of supervisor ratings. To our knowledge, there are no previous studies yet that have directly linked the GFP to such real-life outcomes. Nevertheless, it may be important to examine the criterion-related validity of the GFP because the debate about how to interpret a GFP is ongoing. Some researchers support the notion of a substantive GFP (e.g., Figueredo et al., 2006; Hofstee, 2001; Musek, 2007; Rushton et al., 2008). Other researchers suggest that higher-order personality factors (beyond the Big Five) more likely reflect artifact than substance. For example, factors beyond the Big Five (including the GFP) have been argued to reflect social desirable response tendencies (Bäckström, Björklund, & Larsson, 2009) or statistical artifacts (Ashton, Lee, Goldberg, & de Vries, 2009). Regarding the social desirability account of the GFP, McCrae et al. (2008) used confirmatory factor analysis on twin-study data to argue that higher-order factors reflect a tendency to present oneself in a positive way when responding to questionnaires. While their reasoning specifically applied to the Big Two (α and β) as proposed by Digman (1997) and DeYoung et al. (2002), it would apply just as well to any level above the Big Five, and thus also to the GFP. However, even though their artifact (response tendencies) models fit the data better than the substantive factor models, they also noted that models containing both artifacts and substance fit even better.

DeYoung (2006) compared personality self-reports against peer ratings and came to a different conclusion than McCrae et al. (2008). Namely, he concluded that the Big Two are indeed substantive and reflect genuine personality factors. Notably, he also found a relatively strong correlation between the Big Two (M = .45) but stated that it was uncertain whether this correlation was substantive or artifact.

Bäckström (2007) examined social desirability and higher-order personality factors. He found a clear GFP in his IPIP-based personality dataset. This GFP showed an association with social desirability but he stated that despite this association it could not be concluded whether the general factor indeed was an artifact or instead reflected a fundamental factor of personality. Part of this uncertainty can probably also be ascribed to the status of social desirability as a mere response tendency causing artifacts. More specifically, some researchers would argue that social desirability does not only reflect response bias but is also partly a substantive personality construct (e.g., Hofstee, 2001). Ones, Viswesvaran, and Reiss (1996) referred to social desirability as a “red herring” distracting from the true content of factors. In addition, Carroll (2002) interpreted higher-order personality factors to reflect true social desirability in terms of General Social Competence and General Goodness of Personality.

Regarding the statistical artifact explanation of a GFP (or other higher-order factors beyond the Big Five), Ashton et al. (2009) argued that higher-order factors reflect personality facets scores that correlate with multiple Big Five dimensions. Due to these multiple correlated facets, higher-order factors will emerge beyond the Big Five, but these higher-order factors may not represent true correlations between the Big Five but instead are statistical artifacts. Thus, they stated that the Big Five or Big Six in the HEXACO model reflect the highest meaningful personality dimensions. They also showed that structural equation models based on correlated facets showed a better fit than models based on substantive higher-order factors.

In conclusion, there is evidence supporting the artifact explanation of the general personality factor, but there is also evidence in favor of its substantive nature. For example, Figueredo et al. (2006) showed that a GFP is, similar to other personality factors, related to several major life domains such as parent–child relationship, financial status, self-directedness/planning, subjective well-being, and medical symptoms. In addition, at least one study suggests that the GFP has a heritability coefficient of approximately .50 (Rushton et al., 2009). In the substantive GFP-view, high-GFP individuals are assumed to have a mix of positive traits that pose an advantage in dealing with many social and environmental demands. In Big Five terms, high-GFP individuals are described as open-minded, hardworking, sociable, friendly, and emotionally stable.

In our second study we indirectly address the social desirability or statistical artifact account of the GFP. Our reasoning is based on the assumption that if the GFP is indeed related to performance in a multi-method study (self-report and supervisor ratings) then it is likely to have a substantive component that either affects behavior directly or otherwise affects how other people (e.g., supervisors) perceive a specific individual. Before we outline the validity study however we will first describe how in a meta-analysis (Study 1) we collated the psychometric evidence bearing on the GFP.

2. Study 1: the GFP in a meta-analysis of Big Five correlations

In Study 1, we present a large meta-analyses (K = 212) leading to a matrix containing estimates of true Big Five intercorrelations. These meta-analytic intercorrelations provide a robust test of a GFP in personality measures. The meta-analysis can provide reliable estimates of major GFP-characteristics such as the amount of explained variance and the specific GFP-factor loadings of the Big Five. Previous studies did not reveal a consistent picture of GFP-characteristics. For example, in Musek’s (2007) studies Novelism and Conscientiousness showed the highest GFP loadings, while Openness showed the lowest loading. In a large national survey, Figueredo et al. (2006) found Openness, Extraversion, and Agreeableness to show the highest GFP loadings, and Neurasticism the lowest. In smaller-scale meta-analyses Rushton and Irwing (2008) found that the Big Five contribute to the GFP mainly in an indirect way, through the meta-factors Stability and Plasticity. Our meta-analysis provides an accurate picture of how separate Big Five constructs contribute to a GFP. Moreover, in order to test the generalizability of the GFP we also examine the GFP in different subsamples of participants and among six large categories of Big Five (or FFM) questionnaires. We expect that a reliable GFP is found using different questionnaires and subgroups of participants.

2.1. Method Study 1

2.1.1. Meta-analysis and sample of studies

We use psychometric meta-analysis, which is a tool for summarizing and correcting empirical findings across independent studies in order to get better estimates of the relationship between variables (Hunter & Schmidt, 2004). After the meta-analysis, the resulting matrix of ten corrected intercorrelations is used as input for factor analyses to test for a GFP. The hierarchical approach we use is similar to that of Digman (1997) and of Viswesvaran, Schmidt, and Ones (2005) although these studies never went so far as to test for a general personality factor.

Computerized and manual searches were conducted to find studies for inclusion in the meta-analysis. We searched for studies that used the Big Five, but also included studies that used the Five Factor Model of personality which has strong overlap with the Big Five. Although many studies used one of these models, the large majority of them did not report the intercorrelations among the personality constructs. We set the following three criteria for inclusion in the meta-analysis: (i) the personality measures in the study had to be clearly based on the Big Five or the FFM dimensions, (ii) the study had to contain a table that reported the ten
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