



## The relationship between personality traits, subjectively-assessed and fluid intelligence

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### Abstract

This study looks at the relationship between personality traits (Big Five), fluid (Gf) and subjectively-assessed (SAI) intelligence. British and American university students together ( $N = 186$ ) completed the NEO-PI-R (Costa & McCrae, 1992) and the Raven's Standard Progressive Matrices (Raven, Raven & Court, 1998) after estimating their intellectual ability on a normal distribution. As predicted, Openness to Experience was modestly but significantly related to both SAI ( $r = .20$ ) and Gf ( $r = .21$ ). SAI was also significantly correlated (negatively,  $r = -.21$ ) with Neuroticism. Regressing the Big Five personality traits onto SAI scores, showed that these personality traits were found to account for between 9% and 16% of the variance in SAI. At the same time, SAI (and Openness) was a significant correlate and predictor of Gf, which suggests that SAI may be a mediating concept between personality and psychometric intelligence. Results are discussed with regard to current and future research perspectives on the relationship between personality and intelligence.

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## 1. Introduction

A central question that has returned to the field of individual differences in the last 10 years, is whether and how personality traits and intellectual ability are, or are not, related (Hofstee, 2001). Although this question is nearly as old as the study of intelligence and personality (see for instance Cattell, 1941; Spearman, 1927; Webb, 1915; Wechsler, 1950; Whipple, 1922), both constructs have been traditionally investigated independently, prompting the development of different methods and unrelated theories (Ackerman & Heggstad, 1997; Cronbach, 1949; Hofstee, 2001; Zeidner & Matthews, 2000).

Whereas general intellectual ability appears to be theoretically unrelated to non-cognitive traits (Brebner & Stough, 1995; Eysenck, 1994; Zeidner & Matthews, 2000), traits have been proven to relate to test performance and, since intellectual ability is measured through performance (ability/IQ), it is not surprising that traits are significantly correlated with intelligence. There is longstanding experimental evidence suggesting that Neuroticism (trait anxiety), for instance, is likely to affect performance negatively on examinations (Eysenck, 1982; Humphreys & Revelle, 1984; Wells & Matthews, 1994; Wine, 1982). Furthermore, individual differences in Extraversion/Introversion have been found to relate to different test taking styles (Eysenck, 1971; Furnham, Forde, & Cotter, 1998a, Furnham, Forde, & Cotter, 1998b; Rawlings & Carnie, 1989; Robinson, 1985). Despite this, meta-analytical studies (notably Ackerman & Heggstad, 1997) have shown that personality traits are, at best, only modestly related to general intelligence. Accordingly, personality variables should be considered with IQ as predictors of other, more general or long term, types of everyday performance (i.e., occupational, academic success) (Anastasi, 1998; Chamorro-Premuzic & Furnham, 2003a, 2003b; Hofstee, 2001; Petrides, Chamorro-Premuzic, Fredrickson, & Furnham, in press).

A trait which has generated much controversy with regard to understanding personality-intelligence relationships, is Openness to Experience (see Brand, 1994). Even in meta-analysis, this personality factor is consistently shown to be moderately and significantly correlated with intelligence, particularly with its crystallized aspects (Gc) ( $r = .30$  in Ackerman & Heggstad, 1997). Unlike Neuroticism and Extraversion, Openness appears to be conceptually directly related to intelligence, rather than merely affect test performance (psychometric intelligence). According to Costa and McCrae (1992), Openness refers to aesthetic sensitivity, awareness of one's emotions, preference for novelty and non-traditional values, fantasy tendency, and ideas. However, other researchers have preferred to refer to Openness as Intellect or Culture, interpreting this personality trait in terms of introspective reflection and intellectual knowledge (see Goldberg, 1994; Johnson, 1994; Saucier, 1994). Openness is therefore associated with intellectual curiosity, vivid imagination, and behavioral flexibility (McCrae & Costa, 1997), but also with understanding ability, knowledge in science, change and autonomy (see Ashton, Lee, Vernon, & Jang, 2000). Since these variables are assessed through self-report inventories, it has been implied that Openness could be conceptualized as a self-report measure of intelligence, especially of Gc (Ackerman & Goff, 1994; Goff & Ackerman, 1992).

On the other hand, the fact that (like other personality traits) Openness is assessed through typical, rather than maximal, performance, may suggest that this personality trait could be related to other variables (e.g., interests, curiosity, creativity, motivation) that are relevant to everyday processes of knowledge formation. This idea was first present in Cattell's (1971, 1987) investment

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