Relationship between Personality and Intelligence

Subjects: Others

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There are two major theories in this area. First, *compensation theory* suggests that conscientiousness acts as a "coping/reimbursing strategy" for less intelligent, but ambitious and competitive, people in particular settings. Thus, *relatively* less intelligent individuals may become more methodical, organised, thorough, and persistent (i.e., conscientious) to compensate for their relative lack of intelligence in a highly competitive educational or work environment. That is, they can achieve as much as bright people by simply working harder and smarter. Alternatively, relatively more intelligent people may tend to succeed based on their cognitive efficiency, rather than strenuous effort or persistent effort and organisation.

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1. Introduction

There is longstanding interest in the relationship between personality and intelligence (Ackerman and Heggestad 1997; Bédard and Le Corff 2020; Eysenck 1998; Cattell 1971; Chamorro-Premuzic and Furnham 2004, 2006, 2008; DeYoung 2011, 2020; Kretzschmar et al. 2018; Major et al. 2014; Murray et al. 2014; Rammstedt et al. 2018; Reeve et al. 2006; Schermer et al. 2020; Zeidner and Matthews 2000; Ziegler et al. 2012). The relationship has been investigated in children and young adults (Johann and Karbach 2022) as well as in older adults (Gow et al. 2005). There is also an interesting and relevant literature linking intelligence with creativity (Corazza and Lubart 2021), dark-side traits (Lau et al. 2023), as well as examining how both personality and intelligence contribute to outcome measurements, such as work success (Macke et al. 2022).

Researchers have also developed theories regarding *why* certain traits (e.g., conscientiousness, openness) are related, albeit marginally, to intelligence (Chamorro-Premuzic and Furnham 2004; Rammstedt et al. 2018). The field has been reviewed (Anglim et al. 2022), and indeed there has been a special issue of this journal dedicated to the topic (Colom et al. 2019), as well as numerous other relevant papers (Demetriou et al. 2018; Willoughby et al. 2023).

There have been many differences in these studies with regard to the size and representativeness of the samples tested, as well as, perhaps more importantly, the nature of the tests used (Ackerman and Heggestad 1997; Furnham 2017a, 2017b; Furnham and Treglown 2018). It is not very easy to obtain a large, representative sample to test these hypotheses that can be traced over time, particularly using well known and robust intelligence tests, which often require up to an hour to complete (Beauducel et al. 2007; Gignac 2015; Johnson et al. 2008; Lohman and Lakin 2011). Further, as others have, Reeve and Blacksmith (2009) argued that an understanding of intelligence–personality associations requires the variance due to 'g' to be separated from the variance due to narrow cognitive abilities. Equally, it has been argued and demonstrated that it is important to examine the possibility of nonlinear relationships between the two variables.

2. Two Theories

There is some evidence for compensation theory. Moutafi et al. (2004) found conscientiousness to be more highly, but significantly negatively, correlated with fluid intelligence than crystallised intelligence, consistent with their theory. However, Wood and Englert (2009) found conscientious was negatively correlated with fluid *and* crystallised intelligence. Murray et al. (2014) argued and demonstrated that the true association between conscientiousness and IQ may be zero or positive at the population level but that the use of selected research samples has sometimes resulted in the appearance of a negative association. More recently, Harris-Watson et al. (2022) tested employee samples and found, in three of four samples, that the results supported a "nuanced compensatory mechanism", showing that conscientiousness compensates for low to moderate GMA, but high conscientiousness may be detrimental to task performance in high-GMA individuals. Clearly, there remains much dispute over this theory.

von Stumm (2018) proposed an *investment theory* of adult intelligence, which posits that individual differences in knowledge attainment results from people's differences in cognitive ability *and* their propensity to apply and invest that ability. These traits she referred to as *investment* personality traits. Thus, some traits, such as openness to experience, are related to IQ. von Stumm and Ackerman (2013) identified 34 trait constructs and corresponding scales that refer to intellectual investment, which were classified into different trait categories. These constructs included intellectual curiosity, abstract thinking, openness, absorption, ambiguity, novelty seeking, and social curiosity. In their meta-analysis of 112 studies with an overall sample of 60,097 participants, they found that investment traits were mostly positively associated with adult intellect markers ranging from 0 to .58, with an average estimate of .30. They concluded, however, that the strength of investment–intellect associations differs across trait scales and markers of intellect. In one study, Woods et al. (2019) found evidence for the theory using the California Personality Inventory (CPI).

Others have suggested that certain traits relate not so much to ability (IQ) but rather to the test-taking situation. For instance, it has been demonstrated that neuroticism is negatively correlated with both self-assessed and test-derived, IQ because test-anxiety influences performance (Furnham 2005). However, there have been a number of studies and theories to suggest that neuroticism is positively associated with academic success in highly selected groups (Austin et al. 2002; Leikas et al. 2009). However, this relationship is probably curvilinear since it is unlikely that high levels of anxiety could facilitate performance. Nevertheless, what is apparent is that the more "high stakes" that the test-taking situation is, the stronger that the relationship is between personality and intelligence. This point has been made by Major et al. (2014).

3. Other Traits

Although widely accepted, the Big Five do not encompass all personality traits that have been identified. Over the years, clinical, differential, and social psychologists have identified a large number of traits that could be logically and empirically related to intelligence. These traits include ones such as need for cognition and typical intellectual engagement (Furnham 2020). One recent study examined the relationship between strengths and fluid intelligence and found very little relationship except for the strength of "love of learning" (Kretzschmar et al. 2022).

This research explores two other traits that have been shown to relate to work performance.

The research used different, but validated, measures of both personality and intelligence. The High Potential Type Indicator (HPTI) was designed to assess personality in a work setting nearly 20 years ago. The idea was to assess those traits that had been demonstrated to be related to work performance. Initially, 12 traits were identified, but subsequent psychometric work identified six independent traits, which fulfilled the psychometric demands of a good test (Dissou 2003). A number of papers have used the HPTI (Furnham and Treglown 2018, 2021a, 2021b; Furnham and Impellizzeri 2021; Treglown and Furnham 2020, 2022). The psychometric properties of the measure have been reported (MacRae and Furnham 2020; Teodorescu et al. 2017). There is evidence of the construct, concurrent, and predictive validity of the measure, which has been used frequently in studies of businesspeople (Cuppello et al. 2023a, 2023b).

Four of the six HPTI scales are similar to components of the Big Five—conscientiousness, adjustment (low neuroticism), curiosity (openness), and competitiveness (low agreeableness). However, the HPTI does have two scales that measure concepts that have been part of the personality and individual difference literature for many years. Martinsen (2023) showed the concurrent validity of four dimensions when correlating HPTI and NEO-PI-R test scores in 1196 military people (correlation between adjustment and neuroticism were r = .62, that between curiosity and openness was r = .57, and that of both conscientiousness measures was r = .58.

The first, *ambiguity acceptance* (or tolerance of ambiguity; ToA) assesses how an individual or group processes and perceives unfamiliarity or incongruence. Those who are tolerant of ambiguity perform well in new or uncertain situations, adapt when duties or objectives are unclear, and are able to learn and function in unpredictable times or environments. The highly diverse literature has been reviewed by Furnham (2017a, 2017b) and Furnham and Marks (2013). Because studies have shown ToA to be correlated with openness (Caligiuri et al. 2000), as well as success in educational and work environments (Caulfield et al. 2014; Katsaros et al. 2014).

The other variable was *approach to risk* or *courage,* which is the ability to combat or mitigate negative or threat-based emotions and broaden the potential range of responses. Unchecked fear restricts the potential range of responses and typically leads to behaviours such as avoidance or contrived ignorance, whereas courage is exhibited as the willingness to confront difficult situations and solve problems despite adversity. Courage is thought to be curvilinearly related to success

in many work settings, with both high and low scorers being less successful. It is not clear whether courage would be related to intelligence.

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