



Measured intelligence, achievement, openness to experience, and creativity

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Abstract

Are personality traits related to intelligence? This question is addressed in an in-depth examination of the correlations between, and factor structure of, measured intelligence and personality scales chosen to measure the dimensions of Openness and need for Achievement. Participants (203 adult men and 201 adult women) completed four scales of a timed, group administered, intelligence test, 10 personality scales, and a creativity measure. After principal components analysis with direct oblimin rotation, the two personality factors, Openness and Achievement, were found to have small to moderate positive correlations with an intelligence factor (which included the creativity scale), suggesting that intelligence is related to these personality trait dimensions.

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1. Personality and measured intelligence

Is intelligence related to personality? Historically this question has been addressed by researchers typically using one of three different methods. One method has included examining the zero-order correlations between measured intelligence and omnibus personality (and psychopathology) measures (Baron, 1984; Boyle, 1993; Brebner & Stough, 1995; Cooper, 1974; Eysenck, 1970, 1993, 1994; Gormly & Gormly, 1986; Harris, Vernon, & Jang, 1998; Harris, Vernon, Olson, & Jang, 1999; Jensen, 1973; Ley, Spelman, Davies, & Riley, 1966; Lynn, Hampson, & Agahi, 1989; Nobo & Evans, 1986; Ozer, 1987; Paisley, 1983; Rawlings & Skok, 1993; Robinson, 1982, 1985; Saklofske & Kostura, 1990; Samuel, 1980; Zeidner, 1995). A second means of examining

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the personality and intelligence relationship has been to begin with the premise that intelligence is a personality dimension and then to construct self-report scales which measure intellect or an intellectual personality trait (Ackerman, 1994, 1997; Cattell, 1965; Csikszentmihalyi, 1975; Goff & Ackerman, 1992; Gough, 1953; Lloyd & Barenblatt, 1984; Mayer, Caruso, Zigler, & Dreyden, 1989). The third method of investigating personality and intelligence starts by proposing a theory of what characteristics comprise intelligence and then attempts to link these intelligence characteristics with personality dimensions (Baron, 1984; Wechsler, 1950; see also review by de Raad & Schouwenburg, 1996).

The present study investigates the relationship between personality and intelligence by following the third method outlined above in which a model of personality and intelligence based on a modified version of Eysenck's (1954, 1971, 1979, 1982, 1987, 1992) model of intelligence is examined by focusing on a need for Achievement personality factor. In addition, this study includes a dimension of an intellectual personality factor, Openness, based on both the construct definitions of the indicator variables and on past correlational research. Using multiple indicators of both the personality factors and the intelligence dimension, it is proposed that a meaningful connection may be demonstrated between personality and intelligence.

1.1. Intelligence and achievement

Eysenck (1954, 1971, 1979, 1982, 1987, 1992) defines three types of intelligence as intelligence A, representing the biological component of intelligence, intelligence C, defined as measured intelligence based on performance on intelligence tests, and intelligence B, defined broadly as social intelligence. Eysenck has reported that measured intelligence, or intelligence C, consists of three components: mental speed, persistence, and checking or recognizing errors in alternative solutions to a problem. This model originated from the observation that two individuals could obtain the same measured intelligence score, but had completed correctly, incorrectly, or abandoned different sets of items. By operationally defining the components of persistence and error checking as personality traits, in particular as facets of need for achievement, a test of the influence personality has on intelligence can be examined.

Crano, Kenny, and Campbell (1972) reported that intelligence, defined as the ability to deal with abstract concepts, predicts achievement and the acquisition of concrete skills later in life for students. Others have also found a relationship between intelligence and achievement with respect to the number of years of education an individual completes (Neisser et al., 1996) and with measures of achievement motivation with children (Kagan, Sontag, Baker, & Nelson, 1958). Achievement has also been reported to correlate with specific indicators of intelligence (Baron, 1984; Hakstian & Cattell, 1978), and to be related to self-reported creativity (Heinzen, Teevan, & Britt, 1988). Based on a meta-analysis of over 100 studies, Ackerman and Heggestad (1997) reported that achievement was positively related to spatial ability, verbal fluency, and mathematical ability.

Need for achievement has been regarded as comprising dimensions such as setting and meeting goals and need for personal excellence (Cassidy & Lynn, 1989; Guilford, 1959; Haslam & Baron, 1994; Helmreich, Spence, & Pred, 1988; Jackson, Ahmed, & Heapy, 1976; Neumann, Finaly, & Reichel, 1988; Spence, Helmreich & Pred, 1987; Spence, Pred, & Helmreich, 1989). Goal setting includes behaviors such as persistence, planning, and making use of time efficiently (Neumann et

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