Individual differences and undergraduate academic success: the roles of personality, intelligence, and application

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Abstract

The roles of intelligence and motivation in predicting academic success are well established. Evidence is, however, mixed concerning the role of personality traits in predicting such success. The current study attempted to overcome various methodological limitations associated with many previous studies to examine the potency of the traits of the ‘five factor model of personality’ in predicting academic success up to 3 years later, both directly and when controlling for intelligence and ‘application’ (used as a proxy for motivation). Only two traits yielded significant zero-order correlations with eventual undergraduate success, with both Openness to experience and Agreeableness being positively associated with Final Grades. Openness to experience explained unique variance in Final Grades even when predicting in the company of intellect and application measures. The impact of Agreeableness on Final Grades was wholly mediated by the main application measure; namely, not missing seminars. Less than one fifth of Final Grade variance was explained by all the individual difference variables in combination. Several practical, theoretical, and future research implications are explored. © 2002 Elsevier Science Ltd. All rights reserved.

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1. Introduction

Reviewing the educational research available at the time, Harris (1940) claimed that the most essential determinants of academic success were intelligence and motivation. As Busato, Prins, Elshout, and Hamaker (2000) note, few today would disagree about the continued importance of such factors. In the American Psychological Association ‘Task Force’ review of what is and what is not known about intelligence, Neisser et al. (1996) are unanimous in accepting that intelligence test scores predict a wide range of indicators of academic success (cf. Ackerman & Heggestad, 1997;
Busato et al., 2000; Hirschberg & Itkin, 1978; Mellanby, Martin, & O’Doherty, 2000). Similarly, positive relationships between motivation and academic success seem almost beyond doubt (Pintrich & Schunk, 1996; cf. Busato et al., 2000; Furnham & Mitchell, 1991; Mellanby et al., 2000). However, whilst accepting the roles of intelligence and motivation in determining academic success, contemporary researchers are also interested in whether or not other individual differences may be used to predict academic performance. Personality dispositions are one class of individual differences currently enjoying a considerable amount of attention (Paunonen & Ashton, 2001).

There is growing acceptance that many of the most important personality dispositions may be considered as collectively comprising the ‘Big Five’ traits of the Five Factor Model (FFM) of personality. Currently popular labels for these traits enable the acronym ‘OCEAN’: Openness to experience, Conscientiousness, Extraversion-introversion, Agreeableness, and Neuroticism-Emotional stability. Empirical evidence is mixed concerning the role each of these traits play in determining academic success. One reason for this appears to be that the relationship between certain traits and academic success is age-specific (see De Raad & Schouwenburg, 1996; Furnham & Mitchell, 1991). In reviewing recent investigations of these relationships, therefore, it is necessary to order findings by both trait and age/educational level. (Relevant studies conducted before 1970 will not be reviewed as this has already been done capably elsewhere: see De Raad & Schouwenburg, 1996; Entwistle, 1972; Kline & Gale, 1971. In addition, as this paper focuses on dispositional predictors of academic success, readers interested in relationships between the predictor variables used are referred to Ackerman & Heggestad, 1997; Collis & Messick, 2001; Goff & Ackerman, 1992; Matthews, 1997; Rolfhus & Ackerman, 1999; Saklofske & Zeidner, 1995; Sternberg & Ruzgis, 1994; Stough et al., 1996; Zeidner & Matthews, 2000.)

1.1. Openness to experience

Positive correlations between openness to experience and academic success have been found by Schuerger and Kuna (1987) among school children, De Fruyt and Mervielde (1996) among first year undergraduates, and by Rothstein, Paunonen, Rush, and King (1994) among one of two samples of Business School graduate students (using graduate GPA as the criterion variable). Ackerman and Heggestad’s meta-analysis (1997) also reveals a positive relationship across two studies between openness to experience and “knowledge and achievement.” Against this, no significant correlation between openness to experience and academic success was found among Rothstein et al.’s (1994) second sample of graduate students, nor among Wolfe and Johnson’s (1995) college student sample, nor among Busato et al.’s (2000) sample of first year psychology undergraduates.

1.2. Conscientiousness

De Raad and Schouwenburg (1996) suggest that “there is an impressive list emphasizing the importance of conscientiousness or related factors in learning and education” (p. 325), with conscientiousness and learning outcome variables showing “substantial zero-order correlations” (p. 327). Consistent with this suggestion, positive correlations between conscientiousness and academic success have been found at the school level by Heaven, Mak, Barry, and Ciarrochi (2002); at the college level by Wolfe and Johnson (1995); at the university level by Busato et al. (2000), De Fruyt and Mervielde (1996), and Goff and Ackerman (1992); and at the graduate level
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