Personality and Individual Differences 46 (2009) 581–585

Contents lists available at ScienceDirect

Personality and Individual Differences

journal homepage: www.elsevier.com/locate/paid

# An in-depth look at scholastic success: Fluid intelligence, personality traits or emotional intelligence?

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ARTICLE INFO

*Article history:*
Received 20 August 2008
Received in revised form 31 October 2008
Accepted 12 December 2008
Available online 13 January 2009

*Keywords:*
Scholastic success
Fluid intelligence
Personality traits
Ability-based emotional intelligence
Self-reported emotional intelligence

ABSTRACT

The aim of the present study was to take an in-depth look at the role of fluid intelligence, personality traits and emotional intelligence (both ability-based and self-reported) in predicting scholastic success, verifying the existence of incremental validity of emotional intelligence with respect to fluid intelligence and personality variables. One hundred twenty-four students attending the last two years of high school were administered: the Advanced Progressive Matrices, the Eysenck Personality Questionnaire Revised Short Form, the Mayer-Salovey-Caruso Emotional Intelligence Test, the Bar-On Emotional Quotient Inventory: Short. The results demonstrate the influence exercised by fluid intelligence, personality and emotional intelligence on scholastic success, underlining, in particular, the role of emotional intelligence defined according to the ability-based model.



## 1. Introduction

From an analysis of the literature, the role of intelligence in understanding scholastic success appears to be solid. Numerous studies have demonstrated how intelligence is a predictor of successful performance (Busato, Prins, Elshout, & Hamaker, 2000; Farsides & Woodfield, 2003; Harris, 1940; Mouw & Khanna, 1993; Neisser et al., 1996).

In the literature, the role of personality traits in relation to scholastic success has been traditionally studied (Cattell & Butcher, 1968; Eysenck & Eysenck, 1985; Kline & Gale, 1971). The relationship that ties Extraversion to scholastic success is nonetheless complex, as some studies have found no significant relationships (Furnham & Mitchell, 1991; Halamandaris & Power, 1999; Heaven, Mak, Barry, & Ciarrochi, 2002). Moreover, several studies have found contradictory results, as some variable criteria suggest a positive relationship with Extraversion, for example verbal ability is positively associated with Extraversion (Chamorro-Premuzic, Furnham, & Petrides, 2006), while other variable criteria show no relationship at all (Goff & Ackerman, 1992; Rothstein, Paunonen, Rush, & King, 1994).

It emerged that Neuroticism is associated to lower scholastic success, particularly at a university level (Ackerman & Heggestad, 1997; De Raad & Schouwenburg, 1996) and those that obtain higher scores on the Neuroticism dimension tend to repeat their final exam more times before successfully completing their studies (De Fruyt & Mervielde, 1996). Moreover, Neuroticism is negatively associated with verbal ability (Chamorro-Premuzic et al., 2006).

Psychoticism appears to be the best inverse predictor of academic seminar outcome, in that those that obtain higher scores on the Psychoticism trait seem to possess less motivation, less habit to study and lower oral expression skills (Furnham & Medhurst, 1995). Moreover, Caution (low Psychoticism) is negatively associated with numerical ability (Chamorro-Premuzic et al., 2006). Heaven et al. (2002) also demonstrated that a lower level of Psychoticism is a consistent predictor of academic performance.

Notwithstanding the presence in the literature of studies that have investigated the relationship between scholastic success and both intelligence and personality, in agreement with Lounsbury, Sundstrom, Loveland, and Gibson (2003), it is striking that there are just a few studies that have examined the incremental validity of the personality variables with respect to cognitive variables in predicting scholastic performance, as for example Brown (1994), Roessler (1978), Wolfe and Johnson (1995) and, recently, Di Fabio and Busoni (2007), Furnham and Chamorro-Premuzic (2004), Furnham, Chamorro-Premuzic, and McDougall (2003).

An area of recent interest in scholastic success regards the role that the emotional intelligence construct plays. Petrides, Frederickson, and Furnham (2004) show how emotional intelligence influences the relationship between academic performance and cognitive ability. In a longitudinal study on the transition from high school to university, Parker, Summerfeldt, Hogan, and Majeski (2004), referring to the emotional intelligence model by Bar-On (2002), show that three emotional intelligence dimensions are

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doi:10.1016/j.paid.2008.12.012

significant predictors, although slight, of academic success. In a study conducted on a sample of high school students (Parker et al., 2004), emotional intelligence turns out to be a predictor of scholastic success as defined in terms of the end of year GPA. Taken together, these studies support the existence of a relationship between the emotional intelligence construct and scholastic success. In addition, the study by Van der Zee, Thijs, and Schakel (2002) supports the incremental validity of both self and other ratings of emotional intelligence in predicting success in academic and social life above traditional measures of academic intelligence and personality. The debate in the literature is still controversial as underlined by Amelang and Steinmayr (2006); furthermore, the study by Van der Zee et al. (2002) reported that the measures of trait emotional intelligence were still related to success criteria (academic and social success) after controlling for personality and intelligence measures.

In recent years, a debate has begun questioning the adequacy of self-report measures to demonstrate the emotional intelligence construct. Some authors (Mayer, Caruso, & Salovey, 1999; Mayer & Salovey, 1997) maintained that emotional intelligence can be defined more accurately as a skill rather than a conglomeration of personal traits and characteristics. Mayer and Salovey (1997) presented a model that considers emotional intelligence a form of intelligence tied to the process of elaboration of information. The authors constructed the Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT, Mayer, Salovey, & Caruso, 2002), an instrument to specifically measure ability-based emotional intelligence. From a conceptual point of view, it appears understandable that ability-based emotional intelligence based on competency in accomplishing tasks, in this case of an emotional nature, can be a highly efficacious predictor of scholastic success, defined in terms of GPA, compared to self-reported emotional intelligence (O'Connor & Little, 2003) that refers to different aspects of personal functioning. Nevertheless, in the literature, there is a great debate about the validity of ability-based measures. One of the principal criticisms that Brody (2004) has of the MSCEIT, for example, is that it does not furnish empirical evidence on incremental predictive validity over standard measures of intelligence and personality for important socially relevant outcomes.

The growing interest in the emotional intelligence construct is nevertheless due to the attempt to verify if the introduction of this new variable provides an explanation for the percentage of incremental variance with respect to intelligence and personality (Fox & Spector, 2000; Van der Zee et al., 2002). Interest in emotional intelligence originated from the fact that, while personality characteristics are considered essentially stable, a strong consensus in the literature exists relative to the fact that emotional intelligence is an implementable characteristic or competence (Bar-On, 2002; Mayer et al., 2002).

The present study aims to take a more in-depth look at the role of fluid intelligence, personality traits and emotional intelligence (both ability-based and self-reported) to explain scholastic success in a sample of students attending the last two years of high school, verifying the existence of incremental validity of the emotional intelligence compared to fluid intelligence and personality variables. The sample choice was determined by the desire to take a more in-depth look at the topic with regard to secondary school, in that scholastic success in this context, within the framework of the research, does not appear to be as adequately studied as academic success. The choice of the grade point average (GPA) as a variable criterion involves some considerations. Although the GPA could in itself be a trap tied to variability in grading on the part of the teachers, it however represents a valid criterion as it is a comprehensive measure of grades received in different subjects, thus able to dilute the tendency toward grade distortion on the part of the teachers (Lounsbury et al., 2003). At present, its use can guarantee a higher level of comparability of the results with other studies.

The hypotheses are as follows:

- (H1) fluid intelligence will correlate positively with scholastic success (Busato et al., 2000; Furnham & Chamorro-Premuzic, 2004; Harris, 1940; Lounsbury et al., 2003; Neisser et al., 1996);
- (H2) in relation to scholastic success, the dimensions of personality will be able to add a percentage of incremental variance compared to the variance explained by fluid intelligence (Di Fabio & Busoni, 2007; Furnham & Chamorro-Premuzic, 2004; Furnham et al., 2003; Lounsbury et al., 2003);
- (H3) in relation to scholastic success, emotional intelligence, both ability-based and self-reported, will be able to add a percentage of incremental variance compared to the variance explained by fluid intelligence and personality (Van der Zee et al., 2002);
- (H4) in relation to scholastic success, ability-based emotional intelligence will explain a greater percentage of incremental variance compared to self-reported emotional intelligence (O'Connor & Little, 2003).

## 2. Method

### 2.1. Participants

The sample was composed of 124 students enrolled in the last two years of high school in a school system located in a Tuscan province. The participants consisted of 34 males (27.4%) and 90 females (72.6%; 61 students in their fourth year and 63 students in their fifth year). The age of the participants ranged between 16 and 20 years ($M$ = 17.49, SD = .66).

### 2.2. Measures

To evaluate fluid intelligence, the Advanced Progressive Matrices (APM) test by Raven (1962), which measures non-verbal intellectual efficiency and the subject's general capacity of observation and clear thinking, was used. The test is sub-divided into 2 series of reactives, composed respectively of 12 (Series I) and 36 (Series II) items, on which the subject must indicate only one exact response from among 8 possible alternatives. The first series was used as a short reactive training, while the second series was used as an efficiency test. With regard to reliability, Cronbach's alpha was .91.

To evaluate personality traits, the Eysenck Personality Questionnaire Revised Short Form (EPQ-RS, Eysenck, Eysenck, & Barrett, 1985) in the Italian version by Dazzi, Pedrabissi, and Santinello (2004) was used. This version is composed of 48 items, 12 for each three dimensions and 12 for the Lie scale, to which the subjects give a dichotomous response (Yes/No). The factors that compose this instrument are: Extraversion, which furnishes an index of the subject's sociability and vivacity, based on the scores obtained from the subjects, providing collocation of a continuum that ranges from extraversion to introversion (alpha: .87); Neuroticism, which describes the emotions of the person on a continuum that ranges from emotional stability to instability (alpha: .85); Psychoticism, proposed to demonstrate if and at what level behavior disturbances are present and unravel themselves, as dimensions, provides antipodes of equilibrium ranging from satisfying social adaptation towards increasing levels of anticonformism (alpha: .81).

To evaluate the ability-based emotional intelligence, the MSCEIT (Mayer et al., 2002) in the Italian version by D'Amico and Curci (in press) was used. The instrument is composed of 141 items, of which the response format varies based on the specific