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Selective attention to emotional stimuli: What IQ and openness do, and emotional intelligence does not

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ABSTRACT

We examined how general intelligence, personality, and emotional intelligence – measured as an ability using the MSCEIT – predicted performance on a selective-attention task requiring participants to ignore distracting emotion information. We used a visual prime in which participants saw a pair of faces depicting emotions; their task was to focus on one of the faces (the target) while ignoring the other (the distractor). Next, participants categorized a string of letters (word or nonword), which was either congruent to the target or the distractor. The speed of response to categorizing the string was recorded. Given the emotional nature of the stimuli and the emotional information processing involved in the task, we were surprised to see that none of the MSCEIT branches predicted performance. However, general intelligence and openness to experience reduced response time.

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1. Introduction

In light of recent findings demonstrating the important role emotions play in decision-making and behavior, the ability to manage emotions has emerged as a fundamental quality for everyday functioning (cf. Bechara & Damasio, 2005). Emotions have adaptive functions; thus, accurately interpreting emotional signals may provide substantial evolutionary advantages (Cosmides & Tooby, 2000).

Gardner (1983) first suggested that the ability to handle emotions is an important foundation of adaptive behavior. In his theorization of the "multiple intelligences," Gardner introduced the notion that interpreting and understanding emotions in oneself and others may be considered two distinct types of intelligence: intrapersonal and interpersonal intelligence. The basic idea that adaptive functioning cannot simply be captured by standard intelligence tests – and that paying attention to emotions and acting on them being an equally important facet of intelligent functioning – was again put forward some years later by Salovey and Mayer (1990); they coined the term "Emotional Intelligence" (EI) to suggest that emotion and intelligence were not adversaries but are complementary. Some have suggested, though, that emotions may interfere with thought (Steel, 1997); however, emotions may also support thinking processes, for example by directing attention and emotional resources towards more advantageous solutions (Bechara & Damasio, 2005).

Whether alternative conceptions of intelligence beyond general intelligence (i.e., "*g*") are viable is still a hotly debated area (e.g., Antonakis, Ashkanasy, & Dasborough, 2009; Gottfredson, 2003; Sternberg, 1985) as is the issue of how to conceptualize and measure EI (Mayer, Caruso, & Salovey, 2000; Zeidner, Matthew, & Roberts, 2001). Among the questions that remain unanswered is whether: (a) EI, as currently measured, is distinct from general intelligence and personality, (b) can predict incremental variance in outcomes beyond personality and intelligence, and (c) involves emotion information processing.

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Our purpose was to contribute to these issues by investigating if EI, measured using a performance-based (i.e., ability) test, could predict performance on a selective-attention task that required participants to ignore distracting emotion information, and this beyond the effects of personality and general intelligence. Evidence that an EI measure can predict such a task would provide some support for the theory and its operationalization.

We first discuss how EI might be situated in the nomological space of intelligence and personality and then present the design of our study.

1.1. Is EI an intelligence?

Theorists of EI suggest that EI is a higher-order factor that comprisesfour subabilities moderately correlated with general intelligence (Mayer & Salovey, 1997). However, these theorists have not specifically tackled how the subabilities constituting EI should be related to each other and to different components of intelligence, such as fluid (G*f*) and crystallized intelligence (G*c*).

Cattell (1963) introduced the notion of G*f* and G*c* to distinguish two correlated components of *g*. The first is defined as the ability to perceive relationships among objects and to solve novel problems without relying on previous specific practice or instruction; G*f* is generally measured with tests that have little cultural and scholastic content, such as those including abstract figures and perceptual tasks. G*c* refers to the knowledge gained through learning and experience and it is measured with tests based on verbal skills and acquired knowledge. These two components tend to correlate strongly with each other (Cattell, 1963), thus providing evidence for an overall *g* factor. Importantly, there is substantial evidence to suggest that overall *g* predicts important criteria across a variety of domains (Gottfredson & Deary, 2004; Schmidt & Hunter, 1998; 2004) and that specific brain regions correlate with variability in *g* measures (Colom, Jung, & Haier, 2006; Frangou, Chitins, & Williams, 2004; Jung & Haier, 2007; Narr et al., 2007). The very general nature of *g*, and the fact that it predicts such a general class of outcomes suggests that it should predict performance on task requiring pattern identification in novel stimuli, whether on emotional or non-emotional ones.

To what extent is EI different from general intelligence? Being conceptualized as a form of intelligence, EI might be related to both G*f* and G*c*. In fact, it is conceivable that high EI individuals would have wider emotion knowledge, but also stronger problem-solving abilities in dealing with emotionally charged situations; this latter aspect would not depend exclusively on the amount of emotion knowledge possessed, but also on emotion-processing resources available. The relationship of EI with G*f* and G*c* has not been systematically addressed by theorists of EI, however. Positive correlations between the Mayer, Salovey and Caruso's MSCEIT and G*c* have been reported (Mayer, Roberts, & Barsade, 2008a), suggesting that the ability test partly captures knowledge (i.e., emotional knowledge); yet, Mayer and Salovey's definition of EI includes an aspect that refers also to G*f*, such as reasoning about emotions and solving problems related to emotions. Understanding to what extent current measures of EI as an ability tap into one or the other aspect of intelligence, or both, would help better understand the construct and refine current tests.

In the framework of Carroll's three stratum model of mental abilities (Carroll, 1993), EI might be conceived as a narrower ability subsumed under stratum 2 broad abilities; alternatively it might also be considered as a higher order ability on the same level of G*c* and G*f* (Matthews, Zeidner, & Robert, 2002). Locating EI at the level of either stratum 1 or 2 would imply that how individuals manage emotions ultimately depends on their level of intelligence. Another possibility is to conceive EI as related to, but also distinct from general intelligence and located on Carroll's stratum 3. Although this possibility has not been overtly discussed in the literature of EI, it has been looked at in the cognition and emotion literature, in particular regarding the debate on the independence of emotion from cognition (see Eder, Hommel, & De Houwer, 2007). Relying on experimental (e.g., Murphy & Zajonc, 1993) as well as neuroanatomical evidence (e.g., Bish, Luu, & Posner, 2000) certain scholars have suggested that emotion and cognition are "separate but interacting mental functions mediated by separate but interacting brain systems" (LeDoux, 1998, p. 69).

1.2. Is EI personality?

How to conceive EI with respect to personality is another open question. The domain of research on EI is basically split in two between those who consider EI as an ability measured with performance tests (Salovey & Mayer, 1990) and those who subsume EI as a broad personality dimension assessed through self-report questionnaires (e.g., Petrides & Furnham, 2001). From a theoretical point of view only the latter approach endorses correlations between EI and personality traits. Nevertheless, more recent research (which has accounted for measurement error in the variables) has shown that EI as measured by an EI ability test (i.e., the MSCEIT) significantly overlaps not only with IQ, but also with personality (Fiori & Antonakis, 2011; Schulte, Ree, & Carretta, 2004). In principle, there is no drawback in finding correlations between ability measures and personality. What poses concerns is when the construct measured, either EI as an ability or as a broad personality trait, overlaps so much with existing personality traits to the extent of becoming redundant.

To date, the investigation of the relationships among EI, general intelligence, and personality have been approached almost exclusively with a psychometric approach in which EI tests' scores were correlated with personality and intelligence measures. This approach has been helpful to evaluate the viability of EI measures, especially their discriminant and incremental validity. Yet, the psychometric approach has not addressed which mental processes should be associated to emotionally intelligent functioning. In the current study we compared the contribution of general intelligence, personality, and EI in predicting performance on a selective attention task that required being able to avoid distracting emotion information in order to succeed in the task.

1.3. EI, emotion information processing, and selective attention

In the current study, we will focus on EI as an ability because this approach is more theoretically sound and uses

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