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Cognitive and emotional intelligence in young adults with Autism Spectrum Disorder without an accompanying intellectual or language disorder

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ABSTRACT

Research in the neurosciences has identified distinctions between neural structures that subserve cognitive intelligence (CI) and those subserving emotional intelligence (EI). This study explored the performance of young adults with Autism Spectrum Disorder (ASD) without an accompanying intellectual or language disorder relative to typically-developing peers, on indices of CI and EI. Both the ASD and age- and sex-matched typically-developing groups exhibited high average cognitive intellectual abilities. In contrast, the ASD group reported lower levels of EI relative to their typically-developing peers, as expected given the social and emotional challenges faced by individuals with ASD. Importantly, cognitive intelligence did not correlate with EI in either group. Taken together, these findings further support the theory of dissociable neural systems underlying CI and EI. These findings also highlight the need to address not only the intellectual aspects of cognition, but also the emotional components to increase understanding of, and improve treatment for individuals on the autism spectrum. This understanding would enhance our ability to assess and support young adults with ASD, and ultimately ease their transition into adulthood.

1. Introduction

1.1. Recent diagnostic changes in ASD

Autism Spectrum Disorder (ASD), defined by the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5; American Psychiatric Association (APA), 2013), describes individuals who experience (a) persistent deficits in social communication and social interaction across contexts; (b) restricted, repetitive patterns of behavior, interests, or activities; (c) symptoms that are present in the early developmental period (but may not become fully manifest until later in life when social demands exceed limited capacities); and (d) symptoms that cause clinically significant impairment in everyday

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functioning that (e) is not better described by intellectual disability, or global developmental delay. The recent diagnostic classification change to the broader term Autism Spectrum Disorder (ASD) replaces the previous fourth edition of the DSM's (i.e., DSM-IV-TR; APA, 2000) Pervasive Developmental Disorders category which specified subtypes, including Asperger's syndrome (AS). AS, as defined by the DSM-IV-TR, is expressed through impairments in behavior, social interaction, communication, and pragmatic language. AS was historically differentiated from autistic disorder (AD) by the degree of cognitive impairment and the course of early speech development (Frith, 1991; Wing, 1981). In contrast to those with other ASDs such as AD, individuals with AS display average to above average intelligence, and their speech and language develops similarly to that of typically-developing children in the first three years of life. Additionally, highly specialized skills and circumscribed interests are often present in individuals with AS (Wing, 1981). Although individuals with AS typically have average to superior intellect, they often have limited understanding of their own emotions and the emotions of others, and they demonstrate deficient skills in social contexts (Wing, 1981). In the context of the recent revisions to the DSM, the participants in this study (who were originally diagnosed with AS), would now be reclassified under the broader DSM-5 ASD classification, with the specifiers of without intellectual or language impairments. Despite the recent diagnostic changes, this research will be discussed using the diagnostic terms that were relevant during the time this investigation was conducted.

1.2. Emotional intelligence

Proponents of emotional intelligence (EI) suggest that the construct facilitates an enhanced understanding of individual differences, beyond that accounted for by cognitive intelligence (CI), in social and emotional competencies (Austin & Saklofske, 2005) that enriches functional conceptualizations of emotions and the breadth of human intelligence (Mayer, Roberts, & Barsade, 2008). Theorists have generated several distinct models of EI and two predominant approaches have emerged: the ability and trait approaches.

The ability model formulated by Mayer and colleagues Mayer & Geher (1996), Mayer, Salovey, and Caruso (2000) and captured within the Mayer–Salovey–Caruso Emotional Intelligence Tests, defines EI as a cognitive process involving the intellectual and reasoning skills required to identify, express, label emotions, and to solve problems using emotions. This approach attempts to incorporate EI into the overall psychometric structure of intelligence (e.g., Mayer, Caruso, & Salovey, 1999). In contrast, trait EI is concerned with cross-situational consistencies that are present in specific traits or behaviors, such as empathy, assertiveness and optimism, thereby drawing heavily on personality variables and 'facilitators' of optimal socio-emotional functioning (e.g., stress management, mood; Bar-On, 1997, 2006, 2010). The Bar-On EQ-i (Bar-On, 1997) operationalizes EI according to the broad, yet interdependent, domains of intrapersonal skills (self-regard, emotional self-awareness, assertiveness, independence and self-actualization); interpersonal skills (empathy, social responsibility, and interpersonal relationship); adaptability (reality-testing, flexibility, and problem-solving); stress management (stress tolerance and impulse control); and general mood (optimism and happiness), and it represents one of the predominant approaches to the measurement of trait EI. This approach to EI encompasses capabilities related to the awareness of and ability to express emotions, to understand others' emotions and develop interpersonal relationships, to regulate emotion, to exhibit flexibility and adaptability in personal and interpersonal matters, and to generate positive affect needed for self-motivation required to achieve personal goals (Bar-On, Tranel, Denburg, & Bechara, 2003). Bar-On (1997) has argued that assessing self-reports of emotionally-competent behaviors is akin to measuring one's 'common sense' and ability to 'get along with the world.' (Bar-On, 2006, 2010).

1.3. Neural substrates of cognitive and emotional intelligence

Research in the neurosciences has identified distinctions between neural structures that subserve cognitive intelligence and those subserving emotions and feelings (Bechara, Damasio, & Bar-On, 2006). Different neural systems subserving these functions have been proposed to underlie cognitive and emotional processing streams that are potentially dissociable (Eslinger & Biddle, 2008). Bar-On et al. (2003) contends that the major difference between these critical components of intelligence may be that CI relies more heavily on cortical structures that underlie logical reasoning whereas EI is more dependent on limbic and related neural systems that support the processing of emotions. Additionally, the integrity of specific brain regions such as the ventromedial prefrontal cortex (VM-PFC), believed to be responsible for affective functions, have also been associated with changes in emotional processing, personal judgment in decision-making, social functioning, and EI (Damasio, 1994; Bechara, Tranel, & Damasio, 2000a; Bechara, Tranel, & Damasio, 2000b; Bechara et al., 2006). Numerous investigations with individuals with VM-PFC damage have found that despite uncompromised CI, these individuals make emotional and social decisions that profoundly and negatively impact their lives (e.g., Bechara et al., 2000a).

Bar-On et al. (2003) further theorize that cognitive, emotional, and social intelligence are critical components of general intelligence. CI is distinguished from social and emotional intelligences as it is believed to predominantly relate to mental reasoning abilities, while the latter two are predominantly related to abilities to perceive, process, and apply emotional and social information. Bar-On et al.'s (2003) investigation into cognitive and emotional intelligence in individuals with focal brain injuries revealed no significant differences in cognitive abilities across clinical and control groups. The clinical group was characterized as having experienced injury to the neural system believed to subserve EI, namely the amygdala, insular/