



THE RELATIONSHIP BETWEEN AUTISM SPECTRUM DISORDER TRAITS AND EXCEPTIONAL ABILITIES: INSIGHTS INTO THE SAVANT SYNDROME

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AUTISM SPECTRUM DISORDER (ASD) AND SAVANT SKILLS

Individuals with ASD feature extensively in discussions on savant syndrome and seem to be the most prevalent group among the savant population (Bennett & Heaton, 2017; Clark, 2001; Skuse, 2011). It is important to understand the relationship between ASD and the savant syndrome as the two are closely connected (Boso et al., 2010; Clark, 2001). A 'special ability' according to Soulieres et al. (2010), consists of a peak in cognitive abilities that contrast differently from the measured overall intelligence of that person, usually with a diagnosis of ASD. The term savant is derived from the French word meaning to know and was first used by J. Langdon Down in 1887 to describe individuals with intellectual disabilities who possessed an exceptional ability (Crane et al., 2011; Howlin et al., 2009; Rodger, 2011; Treffert & Wallace, 2006; Treffert, 2014). Down coined the term idiot savant to refer to individuals with severe intellectual disability who possessed extraordinary skills (Treffert, 1998). However, this term of idiot savant is no longer used as it is considered offensive. The term idiot savant has been replaced with the term autistic savant or individuals with ASD who display savant skills. Goodman coined autistic savant in 1972 (Clark, 2001). The term autistic savant is used to refer to individuals with ASD with differing degrees of intelligence who display exceptional (gifted) abilities and experience subtest scores on standardized intelligence tests that is within the gifted range (Donnelly & Altman, 1994).

Down characterised savants with autism as aloof persons who speak in the third person, have rhythmical movements and appear less responsive towards friends. Today, this condition is known as ASD (Darius, 2010; Treffert, 2014). In 1973, the American Association of Mental Retardation (AAMR) described a savant as an individual with low intelligence who possesses a high ability in certain tasks such as mental calculations (Grossman, 1983). Therefore, a savant is classified as an individual who demonstrates exceptional skills despite having an overall low level of general functioning (Finocchiaro, 2015; Treffert, 2009; Treffert, 2014; Young, 2001).

EXTRAORDINARY TALENTS OR ABILITIES

Extraordinary abilities or savant skills have been reported in individuals with ASD in various domains such as fast

mathematical calculations (Bennett & Heaton, 2017; Hiniker et al., 2016; Hughes, 2012; Rieznik & Sigman, 2017). There are more reported cases of savant skills amongst individuals with ASD as compared to other developmental disabilities (Bennett & Heaton, 2017; Finocchiaro, 2015; Hiniker & Renard, 2015). Studies frequently link ASD to the savant syndrome (Bennett & Heaton, 2017; De Marco, Iavarone, Santoro, & Carlomagno, 2016; Hiniker et al., 2016; Hughes, 2010). Much of the collected data and published studies demonstrate a strong link between ASD and the emergence of special skills (Bennett & Heaton, 2017; Hiniker et al., 2016; Meilleur et al., 2015; Quirici, 2015).

NARROW NATURE OF TALENTS

Individuals with ASD who have savant skills are most often identified by the very narrow nature of their talents (Hughes et al., 2017; Treffert, 2014). Beate Hermelin (2001), a professor in Goldsmith College in London, has been studying splinter skills among such individuals. She was one of the first researchers to study groups of individuals with ASD who possessed different skills domains, while earlier studies focused on one individual or on a singular skill (Hermelin, 2001). It was noted that some individuals with low intelligence display incredible ability in the memory domain, which includes musical ability, mathematical calculations, calendar calculations, art and mechanical skills (Bennett & Heaton, 2017; Meilleur et al., 2015; Treffert, 2009). Other talents, including prodigious language (poly-glot) facility, and unusual sensory discrimination in the areas of touch, smell and vision, have been reported but to a much lesser degree. Other skills include neurophysiology, statistics and navigation (Treffert, 2009). In their domains of expertise, these individuals resemble child prodigies, exhibiting a voracious appetite to learn and refine their skills in their area of interest and talent (Winner, 2006).

The various skills exhibited by individuals with ASD who display savant skills fall into a narrow range. However, considering the many skills that human beings possess, the degree of abilities involved in executing these skills is extensive and can range from limited (restrictive) to prodigious (Bennett & Heaton, 2017; Meilleur et al., 2015; Treffert, 2014). The savant skills that individuals with ASD display often occur in one of the following domains: calendar calculation; music –



almost exclusively to the piano; rapid calculation and solving of mathematical problems; art – painting, drawing, or sculpting; prodigious memory (mnemonism); or very unusual sensory discrimination – smell, touch or extrasensory perception (Hollander & Uzunova, 2017; Hughes et al., 2017; Prochnow, 2014; Puente et al., 2016).

Individuals with ASD who display savant skills

Individuals with ASD who display savant skills have much in common with cases of unevenly gifted children. Similar to highly gifted children who possess strong mathematical or artistic abilities, individuals with ASD who display savant skills tend to show a highly developed visual-spatial ability in conjunction with severe or profound language challenges (Happé & Frith, 2009; Hughes, 2012; Jaworski & Eigsti, 2017; Jeon, 2016; Treffert, 2014). Individuals with ASD who display savant skills can either have a singular skill or multiple skills. Individuals with ASD who display savant skills may have specialized skills or talents that are concrete, non-symbolic, right hemisphere skills and highly reliant on memory (Bennett & Heaton, 2017; Shuqin, 2013; Sinha, 2014). Although there are professionals and caregivers in the field of ASD who do not agree with some of Treffert's terminology, such as the classification of early infantile autism as a mental illness, his definition of the savant syndrome incorporating levels of savant ability is widely accepted.

There are cases of spatial or mathematical talents that coexist with verbal deficits that are found in individuals with ASD who display savant skills. The majority of individuals with ASD who display savant skills have IQs of below 70. Some individuals with ASD who display savant skills will exhibit one skill at a normal level whilst others will display one or multiple skills that may be comparable to a prodigious level (Finocchiaro, 2015; Treffert, 2016)

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