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A literature summary on the typology of giftedness among savants

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Abstract
There are three types of savant skills namely talented, prodigious and splinter skills savants Treffert, a researcher in the area of savants uses the terms "talented savant" and "prodigious savant" to differentiate between two different types of savants. According to troffer, talented savants are individuals who have abilities that are above their level of functioning. Talented savants are more common than prodigious savants. Abilities amongst talented savants range from a single skill to multiple skills and are usually accompanied by exceptional memory. In contrast, prodigious savants possess skills and abilities that are considered above their functioning as well as that of a typically developing person. This condition is less common compared to talented savants. It is estimated that the total number of prodigious savants worldwide ranges from less than 50 to approximately 100.

Keywords: savants, talented, prodigious, splinter skills

Introduction

This paragraph will explain what is meant by a savant. Savant syndrome refers to observable behavioural characteristics rather than to a set of diagnostic classifications. Savant syndrome, therefore, includes all types of intellectual disabilities, which also includes ASD (Bennett & Heaton, 2017; Treffert, 2014) [2, 26, 27]. Individuals with savant syndrome may display talents that are above their functioning levels and even in comparison to members of the typically developing population (Bennett & Heaton, 2017; Clark, 2001; Renard, 2015; Treffert & Wilson, 2016) [2, 3, 19]. Savant syndrome is a condition that some individuals with ASD possess. Although research into savant skills is still relatively scarce, there is a growing interest among researchers to understand this rare occurrence (Bennett & Heaton, 2017; Hiniker *et al*., 2016; Traffert, 2014) [2].

There are reports of individuals who despite facing severe intellectual challenges, have displayed savant skills. Savants were first recorded more than 200 years ago (Howlin *et al*., 2009) [10]. According to Treffert (2004) [26, 27], in 1789, Benjamin Rush, a renowned psychiatrist, who is also known as the Father of Psychiatry, noticed a man called Thomas Fuller who was able to calculate at high speed. Thomas Fuller was asked how many seconds a man had lived by the time he was 70 years old, 17 days and 12 hours old. Thomas Fuller could give the correct answer of 2,210,500,800, a calculation that he was able to mentally perform in one and a half minutes.

The acquired savant

The acquired savant is someone who was not born a savant but had developed savant skills due to some event (Strauss, 2014; Treffert, 2014) [26, 27]. One example describes an individual who was hit by a baseball bat and subsequently became unconscious. Upon waking up, he had developed calendar calculation skills. A second example is that of a woman suffering from dementia. In her case, as dementia worsened, her artistic prowess in painting improved to a prodigious level. A third example is that of an elderly man who had developed dementia, and as the condition worsened, his musical savant skills emerged. (Treffert, 2014) [26, 27]

The above cases suggest that individuals with developmental challenges may be susceptible to developing savant skills. It is hypothesized that the human body has a gene that may be the cause for the development of savant skills. This gene is believed to be a backup mechanism that surfaces during certain periods, such as the emergence of developmental challenges. (Ma *et al*., 2005; Nurmi *et al*., 2003) [13, 15].

A sudden genius

Sudden geniuses are individuals who unexpectedly develop a sudden talent, such as in drawing or music. This talent emerges in an unanticipated moment. It may come about in such an unexpected manner that the individual has no recollection of previously having such skills (Frith, 2013; Hutchinson, 2013; Quirici, 2015; Rogers, 2011; Treffert, 2014) [7, 11, 26, 27]. Unlike the acquired savant, many individuals with sudden savant syndrome do not have any underlying intellectual disabilities (Hutchinson, 2013; Treffert, 2014) [11, 26, 27].

The sudden genius has talents that are usually accompanied by some outstanding compromise in the form of a cognitive, intellectual or memory function. Individuals with the sudden genius syndrome, experience a surge of unexpectancy in a pool of talents and skills without any form of brain injury or disease. In addition, there is no compromise for the newly found savant skill including any signs of brain injury or disease (Frith, 2013; Hutchinson, 2013; Treffert, 2014; Treffert & Rebedew, 2015) [7, 26, 27]. Experts in this field have argued that the phenomenon of a sudden genius is not a savant syndrome (Frith, 2013; Hutchinson, 2013; Treffert, 2014) [11, 26, 27]. These individuals who have become sudden savants are unlike the other types of savants in that they have no underlying disability, be it intellectual, cognitive or memory function.

Types of savant skills

Most researchers in the area of savants agree that there are mainly three types of savants (Jeon, 2016; Meilleur *et al*., 2015; Treffert, 2014; Zajac, 2016) [26, 27, 12] as listed in the table below.

Table 1: Three different types of savant skills

Savants	More common Non – functional	More common functional	Less common functional /non–functional
Splinter skill	✓		
Talented		✓	
Prodigious			✓

Source: Jeon, 2016; Meilleur *et al*., 2015; Treffert, 2014 [12, 26, 27]; Zajac, 2016

Splinter skills savants

As indicated in Table 1, studies (Jeon, 2016; Meilleur *et al*., 2015; Treffert, 2014; Zajac, 2016) [12, 26, 27], suggest that the most common type of savant skills is splinter skills. The author was unable to find any quantitative assessment on the percentage of occurrence between the various types of savant skills. These savants possess a minor talent or talents. An obsessive hobbyist or a researcher who is obsessive-compulsive about certain facts demonstrates splinter skills. He or she could have a preoccupation with or expertise in, for example, the memorization of names of baseball players, music trivia, maps, license plates, historical facts, license plate numbers or obscure items such as the different sounds that different types of vacuum cleaners make (Jeon, 2016; Meilleur *et al*., 2015; Treffert, 2014) [12, 26, 27]. These individuals often display obsessive preoccupations with and memorization of non-important matters. Such individuals show levels of interest and competence that are above their general level of function and are more common in the population of individuals with ASD (Finocchiaro, 2015; Treffert, 2014; Zajac, 2016) [26, 27, 12].

Splinter skills are common amongst typically developing children. For many typically developing children, splinter skills are the start of a learning progression that may lead to valuable capabilities. For example, if a child is able to drop a ball into a basketball hoop, he or she may become interested in the game of basketball and the all-encompassing series and variety of skills required to play the basketball game well. However, individuals with ASD may become fixated on only throwing balls into a basketball hoop and not progressing to the basketball game itself.

Some individuals with ASD display advanced reading skills at a young age and therefore may give the impression that they understand what they are reading. They may be extremely good at rote memorization and are able to recite whole paragraphs from books or videos. However, these individuals have little understanding or comprehension of what they had read or said. They can be proficient with numbers and yet, like Raymond in Rain Man, are unable to perform simple transactions such as receiving the correct amount of change from the cashier. Listed below are some common examples of splinter skills

1. An individual who can recite the alphabet backward and forwards at the age of three but is incapable of understanding what these letters are used for.
2. An individual who can narrate the complete script of Disney's Beauty and the Beast, including all the songs in the movie. Yet, he is unable to answer simple questions about the movie characters or the plot.
3. An individual who can recite the statistics of every hockey or football player in the United States and yet is unable to explain the fundamentals and rules of the games.

The usefulness of splinter skills has come into question as they are often considered impractical and irrelevant. For some individuals, a splinter skill may lead to a practical talent, but for most individuals with ASD, this does not happen. For instance, while some children with splinter skills in math may apply their abilities to classroom problem sums, many individuals will continue to recite multiplication tables without any understanding of the subject. Though some individuals with ASD will utilise self-help videos to improve themselves, many who have splinter skills will memorise the video without understanding the meaning or purpose of the video.

Talented savants

Talented savants possess skills, such as memory, hyperlexia, math, art and others, that are beyond the range predicted by a generally low level of intelligence but are not exceptional as these skills may occur at similar levels among the typically developing population (Happe & Frith, 2009; Howlin *et al*., 2009; Pring *et al*., 2009; Quirici, 2015; Strauss, 2014; Treffert, 2014; Young, 2001) [7, 26, 27, 10]. The level of talent is conspicuous but not remarkable. Strong family histories of related abilities were found in some cases. These skills may surface with or without any formal training. Individuals who fall in the talented savant group possess a skill or a set of skills that stand out in contrast to their mental impairment (Darius, 2007; Pring *et al*., 2012; Quirici, 2015; Treffert, 2014) [4, 17, 26, 27]. Talented savants commonly display skills in a single area of expertise. The skills of talented savants are largely functional, for example, playing a musical instrument, drawing or poetry writing.

Prodigious savants

Prodigious savants display skills that are remarkable in contrast to their generally low level of functioning and are considered exceptional even when compared to a typically developing individual (Al-Onizat, 2016; Finocchiaro, 2015; Kupferstein & Walsh, 2016; Skuse, 2011; Treffert, 2014) [1, 16, 24, 26, 27]. Some studies have reported that there are less than 50 prodigious savants living in the world (Jeon, 2016; Sah, 2015; Silverman, 2003) [12], while other studies indicate the worldwide population of prodigious savants is approximately 100 (Christopher, 2013; Elliott & Gresham, 2013). Prodigious skills are the rarest of all the savant skills (Christopher, 2013; Cicchetti, 2013; Elliott & Gresham, 2013) [3, 5].

Conclusion

Treffert (2009) noted that intellectual impairment and other developmental disabilities are more common than ASD. However, he noted that about 59% of individuals with savant syndrome have ASD and that the other 41% have other forms of developmental challenges. Treffert, therefore,

concluded that not all individuals with ASD have savant syndrome and not all individuals with savant syndrome have ASD (Treffert, 2009).

References

1. Al-Onizat SH. Measurement of multiple intelligences among sample of students with autism and intellectual disability using teacher estimation and its relationship with the variables: The type and severity of disability, gender, age, type of center. International Journal of Education,2016:8(1):107-128.
2. Bennett E, Heaton P. Defining the clinical and cognitive phenotype of child savants with autism spectrum disorder. Current Paediatric Research,2017:21(1):140-147.
3. Christopher T. Premodern transcendental perspectives on the missing heritability problem and some intelligence conundrums. Cureus,2013:5(8):1. doi: 10.7759/cureus.13516 Clark, T. (2001). The application of savant and splinter skills in the autistic population through curriculum design: A longitudinal multiple-replication study (Doctoral dissertation). University of New South Wales, Australia.
4. Darius H. Savant syndrome-theories and empirical findings. Retrieved, 2007. from http://www.diva-portal.org/smash/record.jsf?pid=diva2%3A2901&dswid=9543
5. Elliott SN, Gresham FM. Social skills improvement system. Encyclopaedia of Autism Spectrum Disorders, Finocchiaro, 2013, 2933-2935.
6. M Di Blasi FD, Zuccarello R, Costanzo AA, Cantagallo C, Amata MT, Elia M. A case of savant syndrome in a child with autism spectrum disorder. International Journal on Disability and Human Development,2015:14(2):167-175.
7. Frith U. Islands of genius: The bountiful mind of the autistic, acquired, and sudden savant. Child and Adolescent Mental Health,2013:18(1):63-63.
8. Happe F, Frith U. The beautiful otherness of the autistic mind. Philosophical Transactions of the Royal Society B Biology Sciences,2009:364(1522):1345-1350. doi: 10.1098/rstb.2009.0009Hiniker.
9. Rosenberg-Lee A M, Menon V. Distinctive role of symbolic number sense in mediating the mathematical abilities of children with autism. Journal of Autism and Developmental Disorders,2016:46(4):1268-1281.
10. Howlin P, Goode S, Hutton J, Rutter M. Savant skills in autism: Psychometric approaches and parental reports. Journal of Philosophical Transactions of the Royal Society,2009:364:1359-1367. doi:10.1.1098/rstb.2008.0328.
11. Hutchinson I. Islands of genius: The bountiful mind of the autistic, acquired, and sudden savant. Good Autism Practice (GAP),2013:14(1):92-92.
12. Jeon Y. Savant syndrome: A review of research findings. Retrieved, 2016. from epository.stcloudstate.edu/sped_etds/25/
13. Ma DQ, Jaworski J, Menold MM, Donnelly S, Abramson RK, Wright HH, *et al*. Ordered-subset analysis of savant skills in autism for 15q11-q13. American Journal of Medical Genetics Part B: Neuropsychiatric Genetics,2005:135(1):38-41.
14. Meilleur AAS, Jelenic P, Mottron L. Prevalence of clinically and empirically defined talents and strengths in autism. Journal of autism and developmental disorders,2015:45(5):1354-1367.
15. Nurmi EL, Dowd M, Tadevosyan-Leyfer O, Haines JL, Folstein SE, Sutcliffe JS. Exploratory subsetting of autism families based on savant skills improves evidence of genetic linkage to 15q11-q13. Journal of the American Academy of Child & Adolescent Psychiatry,2003:42(7):856-863.
16. Kupferstein H, Walsh BJ. Non-verbal paradigm for assessing individuals for absolute pitch. World Futures,2016:72(7-8):390-405.
17. Pring L, Ryder N, Crane L, Hermelin B. Creativity in savant artists with autism. Autism: The International Journal of Research and Practice,2012:16(1):45-57. doi:10. 1177/1362361311403783
18. Quirici M. Geniuses without Imagination. Journal of Literacy & Cultural Disability Studies,2015:9(1):71-88.
19. Renard AJ. Silence. Black Scholar,2015:45(1):44-50. doi: 10.1080/00064246.2014.997603
20. Rogers SJ. Islands of genius: The bountiful mind of the autistic acquired, and sudden savant. American Journal of Psychiatry,2011:168(8):860-861.
21. San José Cáceres A, Keren N, Booth R, Happé F. Assessing theory of mind nonverbally in those with intellectual disability and ASD: The penny hiding game. Autism Research,2014:7(5):608-616.
22. Silverman S. The key to genius. Retrieved from: http://www.wired.com/wired/archive/11.12/genius_pr.htmlStrauss, J. N. (2013). Autism as culture. The Disability Studies Reader, 2003, 460-84.
23. Strauss J. Idiot savants, retarded savants, talented aments, mono-savants, autistic Savants, just plain savants, people with savant syndrome and Autistic people who are good at things: A view from disability studies. Disability Studies Quarterly,2014:34(3):4.
24. Skuse DH. The extraordinary political world of autism. Brain,2011:134(8):2436-2439. doi: 10.1093/brain/awr111
25. Treffert DA. Asperger's syndrome and the savant syndrome. Retrieved from mhtml: file://E:/Asperger's Disorder and Savant Syndrome Wisconsin Medical Society, 2004.
26. Treffert DA. Accidental Genius. Scientific American,2014:311(2):52-57.
27. Treffert DA. Savant Syndrome: Realities, myths and misconceptions. Journal of Autism and Developmental Disorders,2014:44(3):564-571. doi:101.1007/s10803-013-1906-8
28. Treffert DA, Rebedew DL. The savant syndrome registry: A preliminary report. Wisconsin Medical Society,2015:114(4):158-62.
29. Treffert DA, Wilson C. There's a savant in you. New Scientist,2016:229(3056):28-29.
30. Yang J, Zhou S, Yao S, Su L, Mc Whinnie C. The relationship between theory of mind and executive function in a sample of children from mainland China. Child Psychiatry Human Development,2009:40:169-182. doi: 10.1007/s10578-008-0119-4
31. Yang S, Shin CS. Parental attitudes towards education: What matters for children's well-being? Children and Youth Services Review,2008:30(1):1328-1335.
32. Yeom K, Straka M, Iv M, Michael E, Barnes PD, Skare S, *et al*. Intensity-corrected dual-echo-planar imaging (DE-EP) for improved paediatric diffusion imaging.

PLoS ONE,2015:10(6):1-17. doi: 10.B71/journal.pone.0129325
33. Zajaz R. From Rainman to Rainmaker: A presentation of Jim's journey and rapidly advancing technologies: Integrating proven behavioral therapies with emergent measurement and testing advances will result in transformational progress in autistic individuals, 2016. Retrieved from http://scholarship.claremont.edu/cmc_theses/1344