

Supplemental PowerPoint

Savant Syndrome

The Story of the Real Rain Man

Overview

- Background
- Types of Savant Skills
- Theories of Causation
- Kim Peek: *The Real Rain Man*

Quick Facts

- Affects people with developmental disorders, such as autism, and leads to an astonishing memory
- Condition can be present from birth or appear later on in life
- Affects males 4 to 6 times more frequently than females
- Approximately one in ten people with autism have savant syndrome
- Diagnosed when a child's ability in one area is exceptionally higher than would be expected given his or her IQ or general level of functioning
- First recorded case appeared in a scientific journal in Germany in 1751
- Heredity seems to play a part in the development of savant syndrome
 - One study found a savant "gene", but another study did not confirm its findings

Common Types of Savant Skills

- Musical
- Artistic
- Calendar Calculating
- Mathematics
- Mechanical-Spatial Skills

Theories of Causation

Theories about savant syndrome fall into three categories:

- **Biological-Developmental Theories**
 - Include genetics, neurochemicals, left hemisphere dysfunction, or frontal lobe damage
- **Cognitive Theories**
 - Center around deficits such as a lack of abstract thinking
- **Compensation for sensory disabilities**
 - Blindness and social isolation

Dr. Treffert's Theory: "The Three R's"

"In both the congenital and acquired savant there is brain damage in one area, frequently the left hemisphere, with **Recruitment** of still intact brain tissue in another area of the brain, **Rewiring** of circuitry to that new area, and **Release** of dormant capacity already stored in that newly recruited area."

Kim Peek: *The Real Rain Man*

- Inspiration for the film *Rain Man*
- Overall IQ score was 87, but some sub-scores fell in the superior range of intelligence and others in the mentally retarded range
- Had interests in at least 15 different subject areas
- Knew all the area codes and zip codes in the United States
- Could provide travel directions within any major U.S. city or between a pair of them
- Read Tom Clancy's *The Hunt for Red October*, a 656 page book, in a mere one hour and 25 minutes
 - Four months later, he gave the name of the radio operator in the book referred to the page number, and quoted several passages from the book
- Began memorizing books as they were read to him when he was only 18 months old
 - Learned over 9,000 books and could read a page in 8-10 seconds
- Able to identify composers of musical pieces he had not previously heard



Kim Peek

Raymond: Sally Dibbs, Dibbs Sally. 461-0192.

Charlie: How did you know that?

Raymond: You said read the telephone book last night. Dibbs Sally. 461-0192.

This quote, from the film *Rain Man*, demonstrates the amazing memory of savants. Although this Oscar-winning film is fictional, it depicts the life of an autistic savant fairly accurately. A savant may be able to memorize phone books, as Raymond did in this film, but yet struggle with simple tasks such as getting dressed.

To get a better understanding of the rain man, we will discover what savant syndrome is, explore theories of why savant syndrome occurs, and finally, we will take a look at the story of a real rain man.

Savant syndrome is a rare but spectacular condition that affects people with developmental disorders, such as autism, and leads to an astonishing memory. This condition can be present at birth or appear later on in life. According to the Encyclopedia of Children's Health, savant syndrome affects males 4 to 6 times more frequently than females. Approximately one in ten people with autism have savant syndrome and one out of 1,400 people with mental disabilities have savant skills. Savant syndrome is diagnosed when a child's ability in one area is exceptionally higher than would be expected given his or her IQ or general level of functioning.

According to Dr. Darold A. Treffert of the Wisconsin Medical Society, the first recorded case of savant syndrome appeared in a scientific journal in Germany over 200 years ago in 1751. Later, in Dr. J. Langdon Down's 1887 lectures, ten cases of savant syndrome were described, including the case of a boy who had memorized *The Rise and Fall of the Roman Empire* and could recite the text forwards and backward.

According to the United States National Library of Medicine, savant skills typically occur in five general areas: music, art, calendar calculating, mathematics, or mechanical-spatial skills. Specific skills may include playing a musical piece from memory after only hearing it once, identifying the day of the week for a particular date, or measuring distances precisely without any instruments. People with savant syndrome usually have skills in only one specific area, but people with special cases can have skills in multiple areas.

Savant Syndrome is a condition that leads to astonishing memory skills, but the cause of savant syndrome is currently unknown although there are many theories. Each theory would need to explain the savants' exceptional abilities, the correlation with autism, and why it is more common in males.

Heredity seems to play a part in the development of savant syndrome. One study found a savant "gene", but another study did not confirm its findings. Compensatory learning, reinforcement, and repetition-compulsion may also play a role in the development of savant syndrome, but if this was true all autistic people would be savants. Dr. Treffert's theory is called the "three Rs." This theory states, "In both the congenital and acquired savant there is brain damage in one area, frequently the left hemisphere, with Recruitment of still intact brain tissue in another area of the brain, Rewiring of circuitry to that new area, and Release of dormant capacity already stored in that newly recruited area." Theories about savant syndrome fall into three categories. Biological-Developmental Theories include genetics, neurochemicals, left hemisphere dysfunction, or frontal lobe damage. Cognitive Theories center around deficits such as a lack of abstract thinking. The final theory believes savant syndrome results from a compensation for sensory disabilities, especially blindness and social isolation.

Although scientists remain confused about the cause of savant syndrome, they are amazed by the accomplishments of these unique individuals. Let's take a closer look at one of the most famous stories of savant syndrome, the story of Kim Peek who is also known as the real rain man or "KIM-puter." Kim Peek was born on November 11, 1951, with an enlarged head and malformed cerebellum. According to Scientific American, he also lacked the corpus callosum, the nerve tissue that normally connects the left and right halves of the brain. His brain showed abnormalities in the left hemisphere, which is common among savants.

Kim underwent psychological testing in 1988. His overall IQ score was 87, but the verbal and performance subtests varied greatly, with some scores falling in the superior range of intelligence and others in the mentally retarded range. At this time, Kim's diagnosis was developmental disorder not otherwise specified with no diagnosis of autism.

Kim actually comprehended a majority of the information he memorized, which is unusual among savants. Sometimes his answers to questions were quite literal while at other times they were quite ingenious. Once when asked by his father in a restaurant to "lower his voice," Kim merely slid lower into his chair, thus lowering his voice box.

Kim had amazing mental abilities and had interests in at least 15 areas including world and American history, sports, movies, geography, space programs, actors and actresses, the Bible, church history, literature, Shakespeare and classical music. He could pull a fact from his "mental library" as fast as Google. He knew all the area codes and zip codes in the United States along with the television stations serving those areas. He learned the maps in the front of phone books and could provide travel directions within any major United States city or between a pair of them. He read Tom Clancy's *The Hunt for Red October*, a 656-page book, in a mere one hour and 25 minutes. Four months later, he gave the name of and described the Russian radio

operator in the book, referred to the page number, and even quoted several passages from the book. Kim began memorizing books as they were read to him when he was only 18 months old. He learned over 9,000 books and could read a page in 8-10 seconds. After reading a book, he placed it upside down on his bookshelf to signify that he read it. His comprehension of musical styles was demonstrated by his ability to identify composers of pieces he had not previously heard by assessing the piece's musical style and deducing who that composer might be and when and where it was composed and first performed.

Even with these amazing abilities, Kim still had difficulties functioning in day-to-day life and required assistance with even the simplest of tasks, such as personal grooming and buttoning his clothes.

Dustin Hoffman's Oscar-winning performance in *Rain Man* brought attention to the existence of savants. Today, we have explored what a savant is, theories of why it occurs, and we have learned the story of Kim Peek, the person who inspired *Rain Man*. Although Kim Peek died in 2009, his story will continue to fascinate those of us with average abilities for many years to come.

Works Cited

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