

CLINICAL AND RESEARCH REPORTS

This section contains 1) new research findings, including preliminary data from pilot studies, either clinical or laboratory; 2) worthwhile replication studies; 3) case reports that describe a truly new syndrome or cast new light on established ones; and 4) case reports that indicate a new therapeutic procedure of potential value or call attention to adverse effects of drugs or previously unreported complications of therapeutic interventions. Program descriptions and literature reviews cannot be printed in this section. Criteria for format are listed in "Information for Contributors" in each issue; papers that do not adhere to these criteria will be returned to the author.

An Idiot Savant with Unusual Mechanical Ability

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The idiot savant phenomenon has continued to be an elusive subject in the fields of psychiatry and mental retardation. In recent years, there have been reports of isolated cases of otherwise typically mentally retarded or autistic persons with unusual abilities in calendar calculation (1, 2) or artistic expression (3, 4). Although there have been various explanations advanced for this condition, most viewpoints are now converging on the hypothesis proposed by Hoffman (2), i.e., that intense motivation, practice, and appropriate reinforcement seem to be necessary if not sufficient conditions for idiot savantism. Recent studies have supported Hoffman's contention that the retarded or autistic individual must have some minimum cognitive functioning, perhaps in the moderate or above range of intelligence, to exhibit the characteristics of the idiot savant.

The purpose of this article is to report a case in which unusual mechanical ability was shown by a moderately to mildly retarded institutionalized man.

Case Report

Mr. A was the oldest of several children born to a rural couple in the 1930s. According to the attending physician's report, the patient weighed 3.4 kg at birth, and the delivery was normal and spontaneous. However, there was no prenatal care and the birth occurred in a rural home that lacked sanitation. The child was bottle-fed, weaned at 18 months, toilet-trained at 30 months, and began to dress himself at 40

months. His home life was described as "meager" by the intake social worker.

Mr. A entered public school at age 5 and left at age 15. He did not learn to read or write and was unable to write his name without a model. He did not speak until age 10. His favorite activity in school was working with machinery. Mr. A's mother died when he was an adolescent. When he was 18, he moved in with an uncle and shortly thereafter contracted a virulent infection that permanently damaged his hearing in both ears.

At that time, he was placed in a state institution by his father, who said he was unable to care adequately for his son. Within weeks after the admission, the father died and a younger sibling became Mr. A's legal guardian. When he was admitted to the institution, Mr. A was found to have a performance IQ of 40 on the Arthur Point Scale of Performance (Form 2), indicating a mental age of 6 years, 5 months. He was diagnosed as having a "cerebral defect, congenital," with no further diagnostic details given.

Mr. A has been institutionalized continuously since the early 1950s. His family visits him less than once a year and remains opposed to his placement in a less restrictive setting. He currently attends a sheltered workshop daily and earns a modest sum for his work. He initiates only minimal social interaction there and at the institution. He wears a hearing aid, but audiometric diagnostic techniques have not fully determined how much of his hearing problem is physical and how much is behavioral. He has not learned to sign, despite repeated attempts over the years.

Current assessment data indicate that Mr. A functions in the mild to moderate range of mental retardation. Testing in 1977 revealed a deaf learning age of 9 years, 4 months, and a corresponding learning quotient of 62 on the Hiskey-Nebraska Test of Learning Aptitude, and a social age of 10.5 years and social quotient of 42 on the Vineland Test of Social Maturity. Periodic intelligence tests over the last 25 years have typically placed his intellectual functioning in the IQ range of 55-65, with far better performance than verbal scores. He can meet all of his self-care needs, tell time, and make change; however, he cannot read, nor can he write anything but his name.

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Since his admission to residential institutions, Mr. A has received much attention for his unusual mechanical abilities. Previous records note that he typically repaired clocks, electric hot plates, and bicycles of other residents or staff. He was able to disassemble and clean the cottage dishwasher. He ran the film projector and built lamps, requiring only that the appropriate materials and tools be made available to him.

Because of his extreme slowness and deliberateness, standardized tests for mechanical aptitude have proven unreliable and of questionable validity in assessing his abilities. Therefore, a naturalistic experimental assessment was done in 1978 to measure Mr. A's mechanical abilities. In one task, he was given a broken electric alarm clock to repair. Within an hour, he correctly traced the problem to a break in the wiring, at which point he shrugged and handed the clock back to the examiners. In the other task, he was given a 10-speed bicycle that was broken in several places to diagnose and, if possible, repair. Over two consecutive evenings, Mr. A successfully diagnosed all of the problems and indicated by gesture which tools he would need to repair the bicycle.

Mr. A has his own workbench and a set of power tools, and he engages in a variety of mechanical projects in the cottage. He repairs bicycles for other residents, constructs wood-paneled and mirrored coat racks for sale, and spends much time adding mirrors, lighting fixtures, and extra electrical connections to his own stereo equipment, lamps, and bicycle. His most recent project has been to connect the wiring of his stereo set, headphones, and room lamp with one switch beside his bed.

Mr. A tends to be a social isolate in the cottage and devotes almost all of his free time to his mechanical pursuits. He receives much praise and attention from other residents and staff members for his abilities and is certainly aware of his talents. Aside from his mechanical abilities, his behavior is quite typical for institutionalized individuals of his mental capacity.

Discussion

The available information suggests that Mr. A's condition fits the general paradigm advanced by several investigators of the idiot savant phenomenon. First, his intellectual performance lies within the proposed minimum range for idiot savantism (2). It appears increasingly unlikely in view of other case reports (1, 3, 4) that the condition can occur much below this intellectual range, and to date no such cases have been documented to our knowledge.

Second, Mr. A's case history also suggests that his mechanical abilities were strengthened by a great amount of motivation and practice, which began in his school-age years. In his current residential setting, staff members have shown him how to use various power tools, and he has achieved independence with these tools only after careful supervision. As mentioned earlier, he typically spends several hours each evening on his projects, working slowly and methodically. He prefers this self-initiated activity to group entertainment or outings.

Observations in the cottage have also indicated that he receives extensive social reinforcement from staff members, as well as other residents, for his mechanical pursuits. For instance, staff members proudly show even the most casual visitor to the cottage Mr. A's tools, materials, and completed electrical and mechanical projects, which fill his room and part of a nearby lounge area. From his satisfied smiles and low chuckles as he works, it seems clear that he also receives strong self-reinforcement for these mechanical pursuits.

While we are not arguing that the idiot savant condition is due entirely to the influence of external or environmental factors, this case supports the emerging paradigm for the phenomenon. That is, as Hoffman (2) and Morishima and Brown (3, 4) have argued, the necessary if not sufficient conditions associated with idiot savantism appear to be a minimal cognitive level of functioning, intense practice and motivation aided by a funneling of external stimuli, and strong reinforcement to develop and maintain the unusual ability. The other prerequisite seems to involve an idiosyncratic pattern of intellectual performance, evidenced in this case by Mr. A's aptitude and preference for mechanical tasks.

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