

Working Memory And Activities Of Daily Living Among Children With Intellectual Disability

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Abstract

Intelligence is an ability to learn from experience, adapt to new situations, understand abstract concepts and adapt to new situations. This study attempts to show the correlation between working memory and activities of daily living among children with intellectual disability. Working memory is used to hold information temporarily during performing cognitive tasks like learning, comprehension, reasoning, and problem-solving. The required daily tasks that a person must carry out in order to survive are included in the category of activities of daily living. The majority of healthy adults can carry out these self-care tasks on their own and without much support. Throughout childhood and the early years of adulthood, these basic activities (eating, toileting, dressing, etc.) are acquired gradually. When a child is intellectually disabled, their level of cognitive functioning is considered to be impaired. It denotes a condition in which cognitive development of children is seriously hindered, making it problematic for child to comprehend successfully, to solve problems and adjust in environment. Digit Span Test given by Dr. A.J. Malin (2003) is used to measure working memory and Waisman ADL checklist given by Waisman (2013) is used to measure activities of daily living of children with intellectual disability. The sample size taken for the present study is 50 and the participants belong to age range of 11 to 16 years old. Fifty children with moderate intellectual disability attending the special school of Delhi NCR region are included in the study. Both the tools are used to study working memory and activities of daily living among children with intellectual disability. The hypothesis formulated for the present study states that there will be significant correlation between working memory and activities of daily living among children with intellectual disability. The findings of the study reveal there is a meaningful correlation between working memory and activities of daily living among children with intellectual disability.
Keywords: Working Memory, Activities of Daily Living and Intellectual Disability

Introduction

Memory is the ability of the brain to encode, store, and recall information. One of the two basic categories of long-term memory in people is implicit memory. It influences ideas and used unconsciously. Procedural memory enables an individual to carry out certain tasks without consciously recalling their prior experiences, is one of its most prevalent forms. For instance, remembering how to tie shoes and riding a bicycle without consciously thinking about these activities. Explicit memory, also refers to declarative memory, is the opposite of implicit memory and is the conscious, purposeful recall of facts, experiences, and ideas. The priming procedure, which assesses an individual's performance on activities for which they have been subconsciously prepared, provides evidence for implicit memory.

Working Memory

Working memory is essential for learning and contributes to the progress of cognitive ability. Working memory is a mechanism which permits for the temporary storage and processing of information needed for complex cognitive activities such as learning, reasoning and comprehension. Research in this area appears to depend on the concept of Baddeley's multi-component storage and processing unit, which plays a role in higher order cognitive functioning, to support the theoretical context of working memory within the intellectual disabled population. Attention, learning, and memory all depend on working memory. Working memory consists of three important stages, including:

- **Encoding** is the process of learning new information and connecting it to prior understanding. Encoding is an example of paying attention to some objects while ignoring others. For instance, you might glance at a traffic light and encode whether it is a red or green light rather than paying attention to the nearby trees or plants. The selective nature of the encoding component is crucial in this case. It's also crucial to understand that because your brain stores information every second, memories may not be accurately encoded.
- **Storing** refers to the process of preserving memory over time. Our brain actually undergoes molecular structural changes as a result of memory storage, which may result in memory traces.
- **Retrieving** includes gaining access to stored information when it is necessary. When information is stored deeply as memory, hints and cues are helpful to someone trying to recall a specific memory. Because that song or smell was so closely associated with the memory, sometimes a particular song or smell can bring back memories that someone had completely forgotten.

Working memory is distinct from other types of memory because it has the capacity to store and use particular information for a limited amount of time, such as when performing mental calculations. Working memory and intelligence have been linked in studies, Just and Carpenter (1992) proposed a link between working memory and intellectual functioning in their study. They have proposed that intellectual performance may be improved if a person can keep more knowledge in a temporary store while simultaneously processing it. Working memory was also thought to predict cognitive performance. Many additional scholars have looked into the link between intellectual disability and working memory. Automatic rehearsal was found to be inadequate in children with intellectual disability by Rosenquist, Connors, and Roskos-Edwoldsen (2003). Henry and Maclean compared children's memory performance and found that children performed poorly on activities and thought to be accountable for information retention in phonological-loop and central executive tests.

Most studies found that intellectually disabled children scored poor on working memory test (digit span forward and backward test), when related to normal developing children of same mental age, independent of cognitive level. These studies show that working memory is important since it helps to increase cognitive functioning to a larger extent. The current study is thought to be necessary since previous studies have not thoroughly resolved the questions of the relationship between working memory and activities of daily living among children with intellectual disabilities.

Activities of Daily Living

Activities of daily living or ADL, denotes the core skills which are necessary to care oneself independently such as bathing, mobility and mobility. Sidney Katz (1950) invented the term "activities of daily living", is used to assess the functioning level of an individual. The inability to conduct ADL results in reliance on others or mechanical aids and a low quality of life. ADL assessment is important because it predicts the requirement of alternative living arrangement, hospitalisation, and the requirement of home care. Over time, chronic disease causes a physical deterioration that could impair the ability to perform activities of daily living.

Children with intellectual disabilities frequently struggle with motor learning and coordination of voluntary movements. A wide variety of motor-based ADL (such as personal hygiene, mobility, feeding, and dressing, handwriting and doing crafts and riding a bicycle) present challenges for children with intellectual disability. There is a lot of evidence in the literature that children with intellectual disabilities perform ADL less well than their peers who are developing typically and participate in ADL less frequently. However, a current systematic review revealed the specific challenges that children face when performing and engaging in ADL. The systematic review emphasized the need for better understanding of the disorder and the importance of making every effort

to report how the disorder affects children's day-to-day functioning. The W-ADL checklist covers the relevant ADL domains for children and addresses a wide range of essential ADL (17 items) that are known to be challenging for children with intellectual disability. This extensive range of ADL is necessary in order to support diagnosis, assessment, and intervention because it provides a complete understanding of children's difficulties. Activities of daily living are frequently referred to as the fundamental abilities required to perform basic physical needs. When related to higher level activities, these skills are learned early in life and are relatively preserved in the aspect of deterioration of cognitive functioning. The ability to carry out ADL is influenced by cognitive abilities (such as reasoning and planning), motor abilities (such as dexterity and balance) and perceptual abilities (such as sensory). Occupational and speech therapist, nurse and other members of healthcare team frequently conduct direct assessment of ADL to inform day-to-day care planning. A wider capacity assessment for independent living may include an ADL assessment.

Intellectual Disability

Intelligence Quotient (IQ) became an essential topic in the early twentieth century and our intelligence is our ability to resolve strategic or logical challenges. This has been assumed that people with higher intelligence have higher IQ, as evaluated by valid and reliable tests. Wechsler (1976) provided the most acceptable definition of intelligence: "Intelligence, a hypothetical construct, is the aggregate or global capacity of the individual to act purposefully, think rationally, and deal effectively with his environment." Wechsler proposed that intelligence is, first and foremost, a conceptual construct, and thus far from being a physical reality that can be completely quantified. Second, intelligence is a global capacity that, when examined deeper, increases the possibility of various abilities.

On the basis of level and type of support required, intellectual disability is subclassified in this classification. It also emphasizes the necessity of thorough evaluation in all pertinent areas, such as emotional and psychological functioning. The term "mental retardation" has been replaced with "intellectual disability" by the American Association on Mental Retardation (2007) in recent years. According to a rough estimate by Shalini (1982), people with mental retardation make up about 2% of the Indian population. The prevalence of intellectual disability in India ranges from 0.22 to 32.7 per 1,000 people. Intellectually disabled children are becoming more and more reliant on their family members, especially on parents.

As a result, they needed more assistance and support for a variety of needs. The basic needs that a person expresses for survival such as food, shelter, and clothing. However, social support, financial requirements, professional support, and community services are the requirements that

individuals and families express in order to survive in society. Informational requirements concern the condition of children with intellectual disabilities, how to manage their behaviour, how to teach children, how to play or converse with them and the development of children (Bailey and Simonson, 1988). Other family members may need support, and doctors, dentists, babysitters, and daycare facilities may also be needed. A financial need is the inability to pay for necessities such as rent, food, special equipment, therapy, childcare, etc. Discussing issues or finding solutions, offering support to one another, deciding on household chores, etc. are all aspects of family functioning.

Intellectual functioning is influenced by social, economic, cultural, racial, and ethnic factors. Age, gender, and social status, as well as additional environmental factors such as lead and mercury exposure, iodine deficiency, and prenatal, natal, and postnatal factors, all have a role. Some studies revealed a correlation between low socioeconomic position and an increased prevalence of mental impairment. Along with sentiments of guilt, grief, wrath, and shock, the parents are thrust into novel roles and duties. Children with moderate intellectual disability have restricted language acquisition and development, as well as the capacity to learn and achieve competency in academic abilities. Children with intellectual disability have limitations in writing, reading, mathematics, and other activities that require basic concept knowledge, and they may gain some basic skills such as copying information, and matching items. People struggle with interpersonal interaction, social communication and understanding behavioural standards appropriate to their age and social setting with intellectual disability.

Children with moderate intellectual disability can build meaningful relationship with family and peers due to continued support. Maladaptive behaviour development is a serious worry, which can exacerbate difficulties in social interactions and relationships. Individual with intellectual disability require significant ongoing help to retain independence in daily life tasks and to remain employed. Children may be able to learn fundamental daily living and career skills with regular support and instruction. They require ongoing supervision and guidance in their daily activities as well as when completing job-related responsibilities.

Objective

- To find the correlation between working memory and activities of daily living among children with intellectual disability.

Methodology

The current study is exploratory research and correlational in nature. This study includes a sample of 50 children with moderate intellectual disability who are studying in special school of Delhi NCR. The age range of participants included in the study is 11 to 16 years old and both male

and female children with moderate intellectual disability are included in the study. Children with other disabilities (cerebral palsy, learning disabilities, physically handicapped, epilepsy, hearing and visual impairment) are excluded from the study. The data analyses involve descriptive statistics and Pearson correlation is used to meet the objective of the study.

Hypothesis

- There is significant correlation between working memory and activities of daily living among children with intellectual disability.

Tools

- **Digit Span Test**

Digit span test given by Dr. A. J. Malin (1969), is used to measure working memory of children with intellectual disability.

- **Activities of daily Living checklist**

The 'activities of daily living' (ADL) checklist given by Waisman (2013); it contains 17 items used to assess activities of daily living of children with Intellectual Disability.

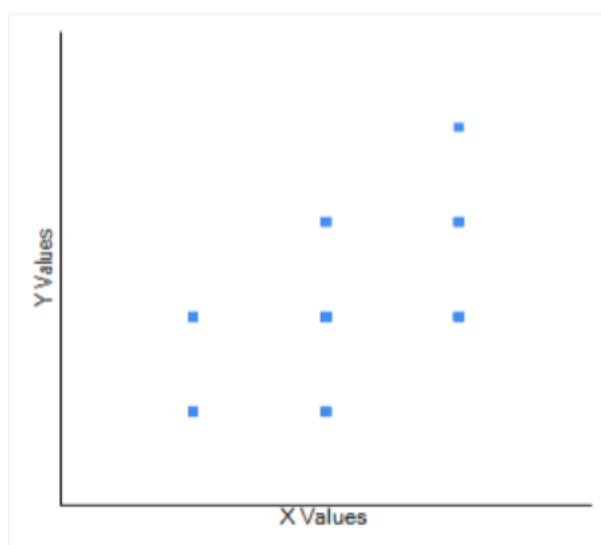
Result and Discussion

The quantitative data is collected and statistical technique including mean, standard deviation and Pearson's correlation coefficient are used to analysis and interpretation of data. The table as given below indicates the descriptive statistics and correlation coefficient between working memory and activities of daily living among children with intellectual disability.

Table 1. Shows correlation coefficient between variables

Variable	N	Mean	Standard Deviation	Correlation coefficient	Remarks
Working Memory	50	1.88	0.71	0.949	Significant
Activities of Daily Living	50	17.08	3.66	0.949	Significant

Graph 1. Shows scatter graph of correlation between variables



The mean score of data of working memory is 1.88 with standard deviation 0.71 and the mean score of data of activities of daily living is 17.08 with standard deviation 3.66. The correlation coefficient between working memory and activities of daily living is 0.949 which is significant at 0.01 level of significant. Graph 1. shows the relationship between two variables, (X value indicates working memory and Y value indicates activities of daily living). Hence, the hypothesis is accepted, it can be said that high working memory scores go with high ADL checklist scores.

Conclusion

This study is conducted to investigate the correlation between working memory and activities of daily living among children with intellectual disability. It can be concluded that this study reveals that there is positive correlation between working memory and activities of daily living among children with intellectual disability. If the score on working memory test is high then it can be concluded that score on activities of daily living checklist would be high. It means children with good working memory can accomplish activities of daily living (eating, bathing, dressing, toileting, etc) easily. As intellectual disability makes an individual unable to live independent life, the family has to bear the burden of caring for such children. More awareness programs and campaigns by the government, private organizations and media, regarding the genetic counselling methods and modifiable risk factors like consanguineous marriages and the methods available to treat them, especially in vulnerable and at-risk populations. Therefore, the approaches that focus on the children with respect to the care, management facilities and rehabilitation services, can be designed accordingly by the government which is helpful for both the child and the family.

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