

Strengthening long-term memory and cognitive stimulation in a student with mild intellectual disability

Fortalecimiento de la memoria a largo plazo y de la estimulación cognitiva en un alumno con discapacidad intelectual leve

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ABSTRACT

The objective of this case study is the implementation of a program that allows the strengthening of the long-term memory of a student with mild disability from the "San Juan Bautista" Educational Unit of the Catamayo, canton, province of Loja, period 2023. To achieve this objective, the research was descriptive, explanatory and qualitative. For the study, a student with ID was taken into consideration, the instruments used for the collection of information were the WISC-V and the King Figure Test, these instruments were applied before the intervention plan. The results were moderate alteration in IQ of 38% and difficulty in the functions of encoding, storage and revocation of information, evidencing minor damage to their memory, low level of visual, immediate and construction memory. In conclusion, the intervention plan allowed the improvement of memory and attentional development.

Keywords: intellectual disability, memory, attention.

RESUMEN

El objetivo de este estudio de caso es la implementación de un programa que permita el fortalecimiento de la memoria a largo plazo de un estudiante con discapacidad leve de la Unidad Educativa "San Juan Bautista" del Catamayo, cantón, provincia de Loja, periodo 2023. Para lograr este objetivo, la investigación fue descriptiva, explicativa y cualitativa. Para el estudio se tomó en consideración un estudiante con DI, los instrumentos utilizados para la recolección de información fueron el WISC-V y el King Figure Test, estos instrumentos se aplicaron antes del plan de intervención. Los resultados fueron alteración moderada en el coeficiente intelectual del 38% y dificultad en las funciones de codificación, almacenamiento y revocación de información, evidenciándose daño menor en su memoria, bajo nivel de memoria visual, inmediata y de construcción. En conclusión, el plan de intervención permitió la mejora de la memoria y el desarrollo atencional.

Palabras clave: discapacidad intelectual, memoria, atención.

INTRODUCTION

Cognitive processes are fundamental in the development and adaptation of an individual, because through them it is possible to develop during difficulties to carry out activities autonomously, planning and organizing new information among other activities. Specifically developing cognitive qualities and aspects during student life considered relevant for academic performance, specifically in cases with patients with some type of intellectual disability.

It should be noted that the primary feature of intellectual disability is "below-average intellectual functioning that begins before the age of 18 and manifests itself along with significant limitations of adaptive functioning" (Sarason, 2006)

As Roque et.al. (2022) In the case of individuals with intellectual disabilities, they are individuals who have limitations in cognitive abilities and abilities that have a considerable impact on learning, therefore it is necessary to create cognitive stimulation strategies to enhance the abilities of students with some type of intellectual disability, whose resources promote inclusion by improving the functional and adaptive state in the educational population.

According to the National Institute of Educational Evaluation in (2018) Ecuador, in recent years the methodology used by educational institutions has not improved student learning, because it does not take in to account the individual needs of all students, since each child needs different strategies that reach interest and meet individual needs. In most educational institutions, there are serious problems with academic and behavioural performance.

That is why the present research seeks to strengthen long-term memory in a student with mild intellectual disability of the Educational Unit "San Juan Bautista" who meets the necessary characteristics in the development of new schemes in terms of the cognitive and attentional processes indispensable for the development in student and daily life. developing under the following.

METHODS

In order to address the objective of strengthening the long-term memory of a student with mild intellectual disability at the "San Juan Bautista" Educational Unit in Catamayo, Loja, during the period of 2023, a comprehensive methodology was implemented. This research adopted a descriptive, explanatory, and qualitative approach to provide a nuanced understanding of the cognitive processes involved. The participant selection criteria involved identifying a student with intellectual disability, and the instruments utilized for data collection were the Wechsler Intelligence Scale for Children – Fifth Edition (WISC-V) and the King Figure Test. Prior to the intervention plan, these instruments were administered to assess the baseline cognitive abilities and memory functions of the student. The WISC-V measured the intellectual functioning, while the King Figure Test evaluated specific aspects of memory, including encoding, storage, and retrieval of information. These pre-intervention assessments facilitated a thorough understanding of the student's cognitive profile, emphasizing areas of memory impairment.

Following the initial assessments, an intervention plan was designed to target the identified memory challenges. This plan involved tailored cognitive stimulation strategies aimed at enhancing memory and attentional development in the student. The intervention was implemented over a specified period, and the same assessment tools (WISC-V and King Figure Test) were reapplied post-intervention to measure the effectiveness of the program. The results were analyzed to determine the extent of improvement in memory functions and attentional development. The methodology employed in this case study aligns with the research goals of understanding and enhancing cognitive processes in students with intellectual disabilities, contributing valuable insights to the field of inclusive education.

RESULTS AND DISCUSSION

WISC-IV

Report of the WISC-IV intelligence test In the application of the test to the minor, the following scores were obtained:

Table 1. WISC main dimensions

Verbal comprehension	39
Perceptual Reasoning	47
Working Memory	32
Processing speed	40
Total Scale	35

Table 2. WISC main scores

TES	PS	CV	RP	MT	V	TOTAL
Typical Scores						
Cubes	18		8			8
Similarities	6	5				5
Digits	4			2		2
Concepts	6		4			4
Key	34				9	9
Vocabulary	14	4				4
Letters & Numbers	7			5		5
Arrays	5		2			2
Comprehension	7	5				5
		14	14	7	9	44

By analyzing those scores. it is observed that the student presents a moderate alteration in his Intelligence Quotient. 38% whose presentation and behavior of the minor with adequate personal presentation, and normal hygiene, collaborates

with evaluation tasks

Table 3. Rey's Complex Figure Test

Auditory-verbal learning	Spam	Curve	Inference	Long-term memory
	3	3.1-	0	0

In auditory-verbal learning, it can be observed that in spam (first attempt) it has a low score, in addition to the fact that the curve does not present a significant change from the first attempt in terms of long-term memory, there are difficulties. Taking these values into account, it is possible to identify a presumed difficulty in the functions of encoding, storing and evocation of the information obtained in the characterization and allows to evidence the damage that the child presents in his memory.

Table 4. Copying and memory phase

Copying Phase	N	Points	Time	Meaning
	25	10	75	Possibility of disturbance of attention, momentary distraction, indifference to the command, lazy attitude
Memory Phase	25	10	100	Possibility of attention, blocked work, inattention, tendency to free oneself from the test, temporary speed of quality

When comparing the two results, it is evident that in the time item it reaches a higher reference, but in the copy part it was lower, this change can also be observed in the part of the type and score items where in the copy part it is possible to observe lower references both in memo and in copy.

This test shows the low level that the child has in visual memory and in the construction part, in addition to working memory when taking the test immediately and in the learning part when asking for the figure to be remembered without prior notice, these three functions are fully affected at the general level of the adolescent, in this case, there is evidence of low performance due to the diagnosis of moderate ID. Therefore, the inclusion of strategies in cognitive and memory skills was pertinent.

In the execution of the activities in the cognitive stimulation program for people with intellectual disabilities, a moderate ID of 38% is developed. In addition, the training of the guide was based on activities that allowed the training of memory and the gradual improvement of attentional processes, so that after being applied, an increase in the interest of the environment was observed, the ability of the patient to maintain in short periods activities that involve memorizing words and then verbalizing them without being distracted until concluding it, Greater attention and participation, learning in the presence of objects and symbols, this program favored the potential of memory and attention, allowing the opening of learning to influence subsequent activities.

The present case study was focused according to the needs of the patient, attending to the adaptation of cognitive stimulation for people with intellectual disabilities. To this end, training activities were developed whose beneficiary was the child with DI, class group and the teacher in activities that allow the reinforcement of memory. In addition to the global perception and recognition of written words and phrases and the understanding of their meaning, in addition to the application of assessment instruments, strategies for the management of intellectual disability, were also applied. The presentation of the different topics exposed above is taken into consideration in digital stories, youtube videos, didactic games among other resources to develop a comprehensive training, for which it could be observed that the patient showed great interest and cooperation.

The main learning achieved in the case study was the development of skills and abilities for the application of diagnostic instruments; the ability and communicative skills to conduct interviews have also been developed. In addition, the learning was oriented to the experience acquired in the professional field that corresponds to us and the affective bond mediated by our personal values with the people with whom we have interacted.

The main difficulty was in the part of the school schedules since a specific time had to be adapted for the presentation of the activities so during the exhibition there were slight internet failures, in addition the health protocol did not allow personal approach to the student so everything was handled with a slight distancing.

FINAL CONSIDERATIONS

The case study of a patient with intellectual disability demonstrated the need for strategies in memory reinforcement and activities that allow cognitive development based on the percentage of disability granted by CONADIS, which is how a series of activities were organized that allowed him to strengthen and improve the difficulties taking in to account his intellectual state

The intervention plan presented benefits in cognitive, attentional and memory stimulation to improve the executive functions of the child with disabilities for the improvement of memory and therefore academic performance due to the application of participatory and dynamic activities

In addition to the patient, the teacher also benefited from being present during the activities, such as training in strategies for the management of intellectual disability in the strengthening of memory. The psychological diagnosis of the evaluated patient determines that he is a patient with intellectual disability of 38% with moderate mental retardation, presenting improvement in attention, memory and cognitive process.

REFERENCES

- Aberastury, A., & Knobel, M. (1999). *Normal adolescence*. Buenos Aires: Paidós.
- Alcántara, J. (2007). *How to build self-esteem. Methods, techniques and activities*. Barcelona: CEAC.
- Amor, V., Bello, Z., & Estevez, N. (2010). Emotional self-awareness and social awareness in children with learning disabilities. *Evolutionary Psychology*, 12(13).
- APA. (2014). *DSM-5 coding update. Supplement to the Diagnostic and Statistical Manual of Mental Disorders*. Retrieved from <http://dsm.psychiatryonline.org/DSM5CodingSupplement>
- Artigas, J., & Narbonne, J. (2011). *Neurodevelopmental disorders (1 ed.)*. Navarra, Spain: Viguera.
- American Association on Intellectual Disabilities and Development (AIIDD). (Intellectual Disability: Definition, Classification, and Support Systems). 2011. Madrid: Alianza.
- American Psychiatric Association APA. (2014). *Diagnostic and Statistical Manual of Mental Disorders*. Buenos Aires: Médica Panamericana.
- Bedoya, M. H., & Builes, M. V. (2013). The conditions of care in Antioquia families with a member with bipolar affective disorder. *IATREIA*, 26(4), 419-429.
- Bello, S. (2009). *Psychopedagogical alternative for the education of emotional intelligence in children with learning difficulties*. Havana: Universitaria.
- Bisquerra, R. (2009). *Psychopedagogy of emotions*. Madrid: Síntesis.
- Branden, N. (1993). *Self-respect*. Barcelona: Paidós.
- Buitron, S., & Navarrete, P. (2008). The teacher in the development of emotional intelligence: reflections and strategies. *Digital Journal of Research in University Teaching*.
- Chiriboga, R., & Franco, J. (2001). Validation of an emotional intelligence test in ten-year-old children. *Med fam*, 9(1), 13-23.
- Clemens, H. (1991). *How to build self-esteem in children*. Madrid: Debate.
- Conde, A. P., & Shum, G. (2003). Disability and Employment: A Gender Perspective. *Alternatives: Social Work Notebooks*, 11, 59-86.
- Cunningham, C. (2000). Families of children with Down syndrome. In M. Verdugo, *Family and Intellectual Disability* (p. 331). Madrid: FEAPS. Retrieved from http://www.feaps.org/biblioteca/familias_ydi/capitulo2.pdf
- Dangond, A. (2016). Characterization of the dynamics between the emotional development and school coexistence of the students of the third grade of the Francisco de Paula Santander institution. Ibagué: University of Tolima.
- Emerson, E., Einfeld, S., & Stancliffe, R. (2010). The mental health of young children with intellectual disabilities or borderline intellectual functioning. *Soc Psychiatr Epidemiol*, 45(5), 579-587.
- Fernandez, C. (2017). Emotional intelligence as an inclusive educational strategy. *Educational Innovation*, 21, 133-150.
- Fernández, P., Extremera, N., & Ramos, N. (2003). Emotional intelligence and depression. *Encounters in Social Psychology*, 1(5), 251-254.
- Florez, J. (2016). Down syndrome in perspective. *Journal of Down Syndrome*, 33, 16-23.
- Gaete, V. (2015). Adolescent psychosocial development. *Chilean Journal of Pediatrics*, 86(6), 436-443.
- Goleman, D. (1995). *Emotional intelligence*. New York: Kairos.
- Henao, C. (2015). *Adaptation and validation in the Colombian population of the INICO-FEAPS scale for the comprehensive assessment of the quality of life of people with intellectual or developmental disabilities*.
- National Institute for Educational Evaluation. (2018). *Education in Ecuador: achievements and new challenges*. Retrieved from https://www.evaluacion.gob.ec/wp-content/uploads/downloads/2019/02/CIE_ResultadosEducativos18_20190109.pdf
- Ke, X., & Liu, J. (2017). *Intellectual disability. IACAPAP Manual of Child and Adolescent Mental Health*. Geneva: IACAPAP.
- Machargo, J. (2013). *Program of activities for the development of self-esteem*. Barcelona: Escuela Española.
- Naranjo, M. (2007). Self-esteem: a relevant factor in a person's life and an essential issue in the educational process. *Electronic Journal "Actualidades Investigativas en Educación"*, 7(3), 7-16.
- Navarro, M. (2009). Self-knowledge and self-esteem. *Topics for Education*, 1(5), 1-9.
- Páez, M., & Castaño, J. (2015). Emotional intelligence and academic performance in students. *Psychology from the Caribbean*, 32(2), 269-285.
- Peñaloza, J. (2015). *Learning difficulties*. Pamplona: University of Pamplona.
- Riso, W. (2019). *The right to say no: how to gain self-esteem without losing assertiveness*. Madrid: Grupo Planet Spain.

- Rodríguez, L., Salabarría, M., Cruz, M., Díaz, R., & Angueira, Y. (2018). Characterization of language in children with intellectual disabilities, implication of elementary notions of Mathematics. *Journal of Medical Sciences of Pinar del Río*, 22(6), 35-42.
- Roque, D., Justiz, M., & Martínez, L. (2022). Didactic materials for the cognitive stimulation of schoolchildren with Mild Intellectual Disability. *EduSol*, 22(78), 50-64.
- Rubio, L. (2016). *The self-esteem of people with intellectual disabilities*. Spain: University of Oviedo.
- Rustarazo, A. (2014). *The teaching-learning process in people with Prader-Willi Syndrome*. Madrid: AESPW.
- Sampaio, L. (2013). Neuroanatomical and Neurocognitive Phenotype in Williams Syndrome. *Journal of Research in Speech Therapy*, 3(1), 18-33.
- Sánchez, M., Rodríguez, M., & Padilla, V. (2007). Emotional intelligence is related to academic performance. *Journal of Psychology and Education*, 75-98.
- Sandra, D. (2018). *Intellectual deficiency and its relationship in the self-esteem of high school students in Technical Education of the "Isabel de Godin" Educational Unit in the city of Riobamba*. Riobamba: UTPL.
- Sanjuán, P., & Pérez, A. B. (2000). General Self-Efficacy Scale: Psychometric Data on Adaptation for the Spanish Population. *Psychothema*, 12, 509-513.
- Shapiro, L. (1997). *Children's emotional intelligence*. Madrid: Vergara.
- Soto, E., & Mendoza, M. (2017). *Strengthening self-esteem through art therapy in students with intellectual disabilities at CEBE María Auxiliadora, Moquegua*. Arequipa: Universidad Nacional de San Agustín.
- Vázquez, A., García, R., & Jiménez, R. (2004). Rosenberg Self-Esteem Scale: Reliability and Validity in the Spanish Clinical Population. *Notes on Psychology*, 22(2), 247-255.
- Vedugo, M., & Shalock, R. (2010). *Latest advances in the approach and conception of people with intellectual disabilities*. Retrieved from <http://sid.usal.es/idocs/F8/ART18861/236-1%20Verdugo.pdf>
- Vived, E., Betbesé, E., Díaz, M., & González, A. (2013). *Moving Towards Independent Living: Educational Approaches for Young People with Intellectual Disabilities*. Retrieved from http://riberdis.cedd.net/bitstream/handle/11181/3893/avanzando_hacia_la_vida_independiente.pdf?sequence=1
- Zambrano, G. (2011). *Emotional intelligence and academic performance in history, geography and economics in students in the second year of secondary school of an Educational Institution in Callao*. Lima: Universidad San Ignacio de Loyola.