© 2015 IJSRSET | Volume 1 | Issue 5 | Print ISSN: 2395-1990 | Online ISSN: 2394-4099
Themed Section: Science and Technology

Predicting of the Relationship between Memory Difficulties and Language Disorder among Pupils with Mathematics Learning Disabilities (MLD) in Khartoum State

Eldood Yousif Eldood Ahmed
Department of Psychology, Faculty of Arts, University of Omdurman Islamic - Sudan
& Department of special education, Faculty of Education, University of Jazan- K.S.A

ABSTRACT

This study was conducted during (2014- 2015) in special educational center, Khartoum State- Sudan. The study aimed to predicting of relation between memory difficulties and language disorder among children with mathematics learning disabilities. Researcher used descriptive methods, by applied memory difficulties and language disorder questionnaire which designed by researcher. The community of this study consisted from teachers of children with learning disabilities. Sample was chosen randomly included (40) teachers. Researcher used statistical package for social sciences program (SPSS). Finally, the results are indicate that: The predicting of relationship between memory difficulties and language disorder among pupils with mathematics learning disabilities is significant, the level of memory difficulties among children with mathematics learning disabilities is above moderate and the level of language disorder among pupils with mathematics learning disabilities, is above moderate.
Key words: Memory difficulties, Language Disorder, Children with mathematics learning disabilities.

I. INTRODUCTION

There is a good, established system of special education provision in Sudan which has become increasingly specialized since 2000. Grew up on private capital, the government did not contribute to the system. However, the latest significant change in children with special needs and their families lives, which sent a message of hope, and awakened hum about learning. There are specialist centres for children with learning difficulties, for children who are disabled and learning disabilities.

1.1 Mathematics Disabilities

The study of Pfannenstiel. H. Kathleen & et al (2015) suggested that students with mathematics difficulties and learning disabilities typically struggle with solving word problems. These students often lack knowledge about efficient, cognitive strategies to utilize when solving word problems. Cognitive strategy instruction has been shown to be effective in teaching struggling students how to solve word problems that employ specific word problem types. The cognitive strategy, math scene investigator, is an example of a cognitive strategy for word problem solving. Torbeyns. J & et al (2004) investigated the strategy characteristics and development of children with mathematical disabilities, the results revealed clear differences in the frequency, efficiency, and adaptiveness with which the CA-matched children applied the available strategies. In contrast, we observed no differences in strategy frequency, efficiency, and adaptiveness between the AL-matched children. These results support the hypothesis that the strategy development of children with mathematics disabilities is marked by a delay rather than a specific deficit. Moreover, this study further documents the value of the methodology used to study children's strategy use and development in the domain of simple arithmetic Donald

J. Mabbott & Bisanz. J(2008).The authors consider the power and limitations of responsiveness-to-intervention for reducing the need for ongoing and intensive services for the segment of the school population traditionally identified as having a learning disability in mathematics. To assess the robustness of RTI, the authors describe four studies with strong demonstrations of efficacy, as they considered the percentage of students who failed to respond, the post-tutoring achievement gap between tutored and not-at-risk students, and the extent of transfer across components of the mathematics curriculum. Lynn S. Fuchs & et al (2012).

1.2 Memory

As predicted by the metamemory approach to memory confidence, there was a positive confidence/accuracy relationship for non-deceptive items and a negative relationship for deceptive items. The results supported the hypothesis that the participants were aware of the levels of memory accuracy associated with the different strategies and used that information to generate their memory confidence judgments William. F. Brewer &, Cristina. S (2012). Finally, we found that the reactivation of a strongly acquired memory requires an activation of the anterior cingulate cortex as soon as 24 h after acquisition. De Jaeger. X & et al (2014), found that the negative relation between performance goal and mathematics was stronger for children with lower levels of mastery goal or working memory, than for those with higher levels in addition, These findings suggest that a reduction in the availability of working memory resources may be one reason for a high performance orientation to be associated with poorer academic performance. Kerry. L & et al (2014), study results suggest that the initial search processes for memories of different specificity levels preferentially engage different components of the autobiographical memory network. Study of Jaclyn Hennessey & et al (2011). Findings suggest that differences in list structure underlie the divergent developmental trajectories previously reported in semantic and phonological false memories. Ellen R. Swannell & Stephen A. Dewhurst (2012).

1.3 Language Disorders

Ellen R. Swannell & Stephen A. Dewhurst (2012). These results indicate grammatical knowledge is relatively more affected than lexical knowledge in Danish speaking children with SLI. However, the results were not consistent with the proposal linking impaired grammar to impairments with procedural memory. At the same time, the study does not rule out that other aspects of procedural learning and memory contribute to the language problems in SLI Jarrad A. G. Lum & Dorthe. B (2012), indicate no significant group differences on all verbal short-term memory tasks and verbal working memory tasks with low and moderate language loads. Statistically significant group differences were found on the most taxing condition, the verbal working memory task involving high language processing load. The L/LD group performed significantly worse than the control group on both the processing and storage components of this task. These results support the limited capacity hypothesis for adults with L/LD. Rather than presenting with a uniform impairment in verbal memory, they exhibit verbal memory deficits only when their capacity limitations are exceeded under relatively high combined memory and language processing demands. Emi. I & et al (2008). they examined the association of the types of language disorders experienced by these students with specific learning disabilities and clinical levels of specific types of psychopathology. Nearly 66% of the students with ED experienced a language disorder, with combined receptive-expressive disorders being the most common (35.5%). Students with a language disorder, particularly combined receptive-expressive disorder, showed significantly poorer achievement and more learning disabilities in all areas compared to students with no language disorder. Furthermore, 91.3% of the students with any mathematics disabilities also had a language disorder. Types of language disorders were not significantly distinguished by psychopathology, although severity was serious in both students with and without a language disorder. These findings have implications for the identification and treatment of language disorders in students classified.

1.4 Literature Review

The study of Shin & et al (2015) revealed that students with mathematics learning disabilities exhibited higher word problem-solving abilities and no significant group differences on working memory, long-term memory, and metacognition measures compared to students with learning disabilities in mathematics and reading. Findings also revealed students with mathematics

learning disabilities demonstrated significantly lower performance compared to age- or grade-matched students with no learning disabilities on both mathematical and cognitive measures. Comparison between students with mathematics learning disabilities and younger students with no learning disabilities revealed mixed outcomes on mathematical measures and generally no significant group differences on cognitive measures. The study of Proctor. B & Proctor. B (2012) Indicate that processing speed and working memory were related to math calculation scores and that comprehension-knowledge, fluid Reasoning, and working memory were related to math reasoning. The study of Sideridis.G & Padeliadu. S (2013) suggested that, the best item synthesis involved items from cognition, motivation, strategy use, and advanced reading skills. It is suggested that multiple psychometric criteria be employed in evaluating the psychometric adequacy of scales used for the assessment and identification of learning disabilities and comorbid disorders. The study of Swanson H. Lee (1994) suggested that, short-term memory and working memory loaded on different factors, and the regressions and partial correlations showed that these different factors accounted for separate variance in reading comprehension and mathematics. Both short-term memory and working memory are important in understanding reading comprehension and mathematics performance in children and adults with learning disabilities; however, working memory is more important for children and adults without learning disabilities. In contrast to working memory, short-term memory contributed minimal variance to word recognition in both ability groups. Overall, it was concluded that short-term memory and working memory do reflect different processes, both of which seem to separate the two ability groups. However, models of memory that view short-term memory and working memory as interchangeable, or short-term memory in isolation, do not provide an adequate framework for capturing academic performance in children and adults with learning disabilities. The study of Pelegrina. S & et al (2014) suggested that children with an arithmetic disability failed in a number updating task, but not in the object updating task. The opposite was true for the group with poor reading comprehension, whose performance was worse in the object than in the number updating task. It may be concluded that the problem of working memory updating in children with learning disabilities is also due to a poor representation of the material to be updated. In addition, our findings suggest that the mental representation of the size of objects relates to the semantic representation of the objects' properties and differs from the quantitative representation of numbers. Passolunghi. C. Maria & Mammarella. C. Irene (2011) Results showed that only children with severe mathematics learning disabilities failed in spatial working memory tasks if compared with children with low mathematical achievement and TD. The study of Swanson H. Lee (2011) suggested that, support the notion that children's working memory performance under dynamic testing conditions was related to the rate of growth in reading comprehension but unrelated to subgroup differences in reading. The study of Swanson H. Lee & et al (2010) suggested that, stable strategy choices, cued performance, and strategy instruction significantly bolstered working memory performance in children with RD, their overall working memory performance, however, was constrained by capacity limitations. The study of Donald J. Mabbott & Bisanz. J (2008) suggested that, the performance of children with mathematics learning disabilities on multiple measures of multiplication skill and knowledge was most similar to that of ability-matched younger children, mathematics learning disabilities may be due to difficulties in computational skills and working memory. James D. Oyleret & et al (2012) the results indicated that the reading disabilities group learned significantly fewer list items and did so at a slower rate than the control group. Although the participants with reading disabilities were equally able to retain information once learned, they did demonstrate inefficient elaborative rehearsal strategies. They also recalled fewer words in both the semantic and phonetic cued-recall conditions, but the effect size was significantly greater in the latter. Taken together, the data suggest that students with reading disabilities have less efficient rehearsal and encoding mechanisms but typical retention. Retrieval also appears typical except under conditions that require information to be recalled based on phonetic codes. The study of De Weerdt. F & et al (2013) suggested that, elementary school children with reading disabilities (RD; n = 17), mathematical disabilities (MD; n = 22), or combined reading and mathematical disabilities (RD+MD; n= 28) were compared to average achieving (AA; n = 45) peers on working memory measures. On all working memory components, 2 (RD vs. no RD) × 2 (MD vs. no MD) factorial ANCOVAs revealed clear differences between

children with and without RD. Children with mathematics disabilities had lower span scores than the AA children on measures of the phonological loop and the central executive. A significant interaction effect between RD and MD was found only for listening recall and had a small, partial effect size. In addition, analyses showed that the best logistic regression model consisted of a visuospatial and a central executive task. The model significantly distinguished between the AA and clinical groups and between the MD and RD+MD groups. Evidence was found for domain-general working memory problems in children with learning disabilities. Management of working memory loads in structured learning activities in the classroom, at home, or during therapy may help these children to cope with their problems in a more profound manner. Julia A. Englund & et al (2014) study has demonstrated strong connections among working memory, higher-level cognition, and academic achievement. Results indicated the WOMBAT measures separate verbal, Static visual-spatial, and dynamic visual-Spatial dimensions, and that more than 98% of items contribute to measurement of those dimensions. This provides support for the theoretical organization of working memory into three distinct content domains in the WOMBAT. Misfitting items were identified using infit and outfit indices for further review to improve reliability and stability. Results also demonstrated adequate person separation and Rasch person reliability and item reliability. Test–retest reliability and internal consistency coefficients suggest adequate reliability for early-stage research, but further refinement is needed before the WOMBAT can be used for individual decision making. Implications for future test development and research on the working memory construct are provided. Peng. P & Fuchs. D (2015) Findings suggest however tentatively that brief but intensive verbal working memory training may strengthen the verbal working memory and comprehension performance of young children at risk. The study of Swanson H. Lee, Xinhua Zheng, & Olga Jerman (2009) suggested that, the purpose of the present study was to synthesize research that compares children with and without reading disabilities on measures of short-term memory and working memory. The findings indicated that domain-specific short-term memory and working memory differences between ability groups persisted across age, suggesting that a verbal deficit model that fails to efficiently draw resources from both a phonological and executive system underlies reading disabilities. The study of Michael J. Orosco & et al (2013) suggested that, the purpose of this study was to assess the effectiveness of a math comprehension strategy called dynamic strategic math on word problem solving for Latino ELLs. The results suggest the intervention facilitated math problem–solving performance. The study of Hélène Deacon & et al (2014) suggested that children with specific language impairment have demonstrated general spelling and writing difficulties. Our results suggest that elementary-school-aged children with specific language impairment are sensitive to the consistent spelling of roots, at least to the extent predicted by their general spelling abilities.

The aims of this study to determine the level of the quality of learning disabilities curriculum, classroom environment and supporting services, among pupils with mathematics learning disabilities, of high quality and safe services, which meet the needs of pupil with learning disabilities throughout the life course. In addition to verify their aims by answer following question are:

i. What the level of memory disabilities among pupils with mathematics learning disabilities?
ii. What the level of language disorder among pupil with mathematics learning disabilities?
iii. What the level relation between memory disabilities and language disorder among pupil with mathematics learning disabilities?

II. METHODS AND MATERIAL

2.1 Method Research Approach

In a study, the researcher used descriptive method, depend on analytical technique. In addition, were consists of questionnaire adapted by the researcher.

2.2 Study Group

It formed from male and female student with learning difficulties in special educational center, Khartoum state, Sudan (20) of male and female pupils with mathematics learning disabilities. Also consisted major of learning difficulties teams there are including learning difficulties teachers, normal classroom teachers, directors of learning difficulties programs and directors of educational.

2.3 Sampling

The researcher used a simply random sampling method. The sample was consist of (22) pupils with mathematics learning disabilities.

2.4 Supervisors-Questionnaire Techniques
The questionnaire was prepared by the researcher, is formed from (20) phrases distributed into two dimensions, memory disabilities (10), Language disorder (10) phrases.

In order to ensure the validity and reliability of the questionnaire form, it distributed to four instructors who had completed their doctorates and this form developed in accordance with the opinions of the instructors, then pilot were conducted and the value of reliability was found. It was about (0.85) and after that, the questionnaire forms became ready for application.

2.5 Practical Procedures:
The principle of voluntarism was the pre-condition of participating in questionnaire. For the questionnaire, an explanation was prepared. The goal of the research and how the study would be carried out were clearly stated in it. In addition, it was emphasized that the identities of the participants would remain confidential. During the questionnaire, written forms were used. Questionnaire took place between 1-6 weeks, and the researcher used E-mailing technique to answering the questionnaire.

2.6 Data Analysis
After collecting data, the researcher used: T- test for one sample, T-test for independent samples test, to examine the study hypotheses depend to SPSS program.

III. RESULTS

3.1. What the level of memory difficulties among pupils with mathematics learning disabilities mathematics learning disabilities? To answer this question, the researcher used (T) test for one sample, table (1) shows the result. When we compare the mean respectively (9.64), with standard mean (9), I found the mean is greater than standard mean and the significant level (0.21) is greater than the sig value (0.05), this is means that the level of memory difficulties among pupils with mathematics learning disabilities is low.
3.2. What the level of language disorder among pupils with mathematics learning disabilities? To answer this question, the researcher used (T) test for one sample, table (2) shows the result. When we compare the mean respectively (9.27), with standard mean (9), I found the mean is greater than standard mean and the significant level (0.53) is greater than the sig value (0.05), this is means that the level of language disorder among pupils with mathematics learning disabilities is low.
3.3. what the relation between memory difficulties and language disorder among pupil with mathematics learning disabilities? To answer this question, the researcher used Pearson correlation, table (3) shows the result. When we compare the correlation value (659), with standard sigma level (0.001), I found that it, greater than significant level (0.05) is greater than the sig value (0.01), and this is means that the relation between memory difficulties and language disorder among pupil with mathematics learning disabilities is significant.

Table1. Shows level of memory disabilities among pupil with mathematics learning difficult.

Variable	Mean	Std	T	df	sig	Result
Memory Difficult	9.6	2.3	1.3	21	0.2	Significant

Table2. Shows level of Language disorder among pupil with mathematics learning disabilities.

Variable	mean	Std	T	df	sig	Result
Language Disorder	9.3	2.0	0.6	21	0.5	Significant

Table3. Shows the relation between memory disabilities and Language disorder among pupils with mathematics learning disabilities.

Variables	Correlation	sig	Result
Memory &Language	659**	0.001	Significant

IV. DISCUSSION

4.1. The level of memory difficulties among pupils with mathematics learning disabilities, is above moderate. This result means, that memory difficulties was effected on pupils with mathematics learning disabilities, this result is on line the study of Passolunghi & et al (2011) suggested that only children with severe mathematic learning disabilities failed in spatial working memory tasks if compared with children with low mathematical achievement and TD. In addition, the study of De Weerdt & et al (2013) suggested that, children with mathematic disabilities had lower span scores than the AA children on measures of the phonological loop and the central executive, also analyses showed that the best logistic regression model consisted of a visuospatial and a central executive task. The model significantly distinguished between the AA and clinical groups and between the mathematic learning disabilities and reading disabilities+ mathematic learning disabilities groups. Evidence was found for domain-general working memory problems in children with learning disabilities. Management of working memory loads in structured learning activities in the classroom, at home, or during therapy may help these children to cope with their problems in a more profound manner. In addition, the study of Passolunghi. C. Maria & Mammarella. C. Irene (2011) suggested that only children with severe mathematic learning disabilities failed in spatial working

memory tasks if compared with children with low mathematical achievement and TD, in addition, the study of Donald J. Mabbott & Bisanz. J(2008) suggested that, the performance of children with mathematic learning disabilities on multiple measures of multiplication skill and knowledge was most similar to that of ability-matched younger children Mathematic learning disabilities may be due to difficulties in computational skills and working memory, in addition, the study of Swanson. H. Lee & et al (2010) suggested that stable strategy choices, cued performance, and strategy instruction significantly bolstered working memory performance in children with reading difficulties, their overall mathematic learning disabilities performance, however, was constrained by capacity limitations. In addition, the study of Shin. M & Bryant. P. Diane (2015) suggested that, students with mathematics learning disabilities demonstrated significantly lower performance compared to age- or grade-matched students with no learning disabilities on both mathematical and cognitive measures comparison between students with mathematics learning disabilities and younger students with no learning disabilities revealed mixed outcomes on mathematical measures and generally no significant group differences on cognitive measures.

Researcher suggested that, memory difficulties have a significant impact on the desirable learning building, and it should be on teachers of learning difficulties in sourcing search for the best educational strategies rooms and used with people with learning difficulties, and people with mathematics difficulties, in particularly.

4.2. The level of language disorder among pupils with mathematics learning disabilities is above moderate. This result means that language disorder is significant, on line, the study of Deacon. H & et al (2014) suggested that, elementary-school-aged children with SLI are sensitive to the consistent spelling of roots, at least to the extent predicted by their general spelling abilities, in addition, the study of Pfannenstiel. H. Kathleen & et al (2015) suggested that students with mathematics difficulties and learning disabilities typically struggle with solving word problems. These students often lack knowledge about efficient, cognitive strategies to utilize when solving word problems. Cognitive strategy instruction has been shown to be effective in teaching struggling students how to solve word problems that employ specific word problem types. The cognitive strategy, Math Scene Investigator, is an example of a cognitive strategy for word problem solving.

Researcher suggested that, a significant impact of language disorder among students with learning disabilities, if not rapid early intervention, it will increase the complexity of the learning process, which doubles the efforts of teachers in the face of Other disorders associated with the difficulty of learning.

4.3. There are relation between memory difficulties and language disorder among pupils with mathematics learning, is significant, on line, the study of De Weerdt. F & et al (2013) suggested that significant interaction effect between RD and learning disabilities was found only for listening recall and had a small, partial effect size, in addition, the study of Disagree, Swanson. H. Lee (2011) suggested that support the notion that children's working memory performance under dynamic testing conditions was related to the rate of growth in reading comprehension but unrelated to subgroup differences in reading, in addition, the study of Proctor. B & Proctor (2012) suggested that, multiple regression analyses found that processing Speed and working memory were related to math calculation scores and that comprehension-knowledge, fluid reasoning, and working memory were related to math reasoning, in addition, the study of Shin. M & Bryant. P. Diane (2015) suggested that comparison between students with mathematics learning disabilities and younger students with no learning disabilities revealed mixed outcomes on mathematical measures and generally no significant group differences on cognitive measures.

Researcher suggested that, the relationship is that the language is the basis learning to speak and acquire concepts, Learning depends entirely on the growth and development of the language level, memory are responsible for receiving information, processing, interpretation, recognizable, and be aware of. So the relationship is a positive whenever it grew language disorder increased the possibility of a difficulty in the multi-memory.

V. CONCLUSION

This is study is modern and contemporary studies because conducted about the predicting of the relationship between memory difficulties and language disorder among pupils with mathematics learning disabilities, so that to enhance the quality of education with learning disabilities, by evaluating the level of availability of programs services very important, to promote abilities and build skills for learning disabilities pupils . Which helps educators and teachers on educational planning successful, towards a better future for this category among special groups which meet the needs of pupil with learning disabilities throughout the life course, Evaluate the quality of learning disabilities programs services is very important in special education field, to improving academic achievement. Finally, the study found that, the predicting of the relationship between memory difficulties and language disorder

among pupils with mathematics learning disabilities is significant, the level of memory difficulties among children with mathematics learning disabilities is above moderate and the level of language disorder among pupils with mathematics learning disabilities, is above moderate.

VI. REFERENCES

[1] De Jaeger. X et al (2014)Characterization of Spatial Memory Reconsolidation, Learning & Memory, v21 n6 p316-324 Jun 2014.

[2] De Weerdt. F et al (2013) Working Memory in Children With Reading Disabilities and/or Mathematical Disabilities, *J Learn Disabil*, September 1, 2013 46: 461-472, Ghent, 9000, Belgium.

[3] Deacon. H et al (2014) The Representation of Roots in the Spelling of Children With Specific Language Impairment, *J Learn Disabil* January/February 2014 47: 13-21, first published on November 12, 2013 doi:10.1177/0022219413509965, Dalhousie University, Halifax, Nova Scotia, Canada.

[4] Donald J. Mabbott & Bisanz. J(2008)Computational Skills, Working Memory, and Conceptual Knowledge in Older Children With Mathematics Learning Disabilities, *J Learn Disabil*, January/February 2008; 41(1) : pp. 15-28, University of Toronto, Ontario

[5] Ellen R. Swannell & Stephen A. Dewhurst (2012) Phonological False Memories in Children and Adults: Evidence for a Developmental Reversal, *Journal of Memory and Language*, 66 (2): p376-383 Feb 2012.

[6] Emi. I et al (2008)Contributions of Language and Memory Demands to Verbal Memory Performance in Language-Learning Disabilities, *Journal of Communication Disorders*, 41 (6) p512-530 Nov-Dec 2008

[7] Gregory J. Benner et al (2009)Types of Language Disorders in Students Classified as ED: Prevalence and Association with Learning Disabilities and Psychopathology, Education and Treatment of Children, 32 (4): p631-653 2009.

[8] Jaclyn Hennessey. F et al(2011)Differential Neural Activity during Search of Specific and General Autobiographical Memories Elicited by Musical Cues, Neuropsychologia, 49 (9) p2514-2526 Jul 2011.

[9] James D. Oyler et al (2012) Verbal Learning and Memory Functions in Adolescents With Reading Disabilities *Learning Disability Quarterly* August 1, 2012 35: 184-195, University of Arizona, Tucson, USA.

[10] Jarrad A. G. Lum & Dorthe . B (2012) Declarative and Procedural Memory in Danish Speaking Children with Specific Language Impairment, *Journal of Communication Disorders*, 45 (1): p46-58 Jan-Feb 2012.

[11] Julia A. Englund et al (2014) Development and Evaluation of an Online, Multicomponent Working Memory Battery, October 1, 2014 21: 543-56,1University of South Carolina, Columbia, SC, USA.

[12] Kerry. L et al (2014) Interaction between Cognitive and Non-Cognitive Factors: The Influences of Academic Goal Orientation and Working Memory on Mathematical Performance, Educational Psychology, 34 (1): p73-91 2014.

[13] Lynn S. Fuchs. et al (2012)The Early Prevention of Mathematics Difficulty: Its Power and Limitations,J Learn Disabil, May/June 2012; 45(3) : pp. 257-269., first published on April 6, 2012, 1Vanderbilt University, Nashville, TN, USA

[14] Michael J. Orosco et al (2013) The Effects of Dynamic Strategic Math on English Language Learners' Word Problem Solving, *J Spec Educ* August 1, 2013 47: 96-107, University of California at Riverside, USA.

[15] Passolunghi. C. Maria & Irene Cristina Mammarella(2011) Selective Spatial Working Memory Impairment in a Group of Children With Mathematics Learning Disabilities and Poor Problem-Solving Skills, *J Learn Disabil*, July/August 2012,. 45(4) : pp. 341-350., first published on March 28, 2011, Faculty of Psychology, University of Trieste, Italy Department of Developmental and Social Psychology, University of Padova, Italy.

[16] Pelegrina.S et al (2014) Magnitude Representation and Working Memory Updating in Children With Arithmetic and Reading Comprehension Disabilities, *J Learn Disabil*, 0022219414527480, first published on March 31, 2014, Department of Psychology, University of Jaén, Spain.

[17] Peng. P& Fuchs. D (2015)A Randomized Control Trial of Working Memory Training With and Without Strategy Instruction Effects on Young Children's Working Memory and Comprehension, *J Learn Disabil* July 8, 2015 0: 002219415594609v1-2221941559460.

[18] Pfannenstiel .H. Kathleen et al (2015) Cognitive Strategy Instruction for Teaching Word Problems to Primary-Level Struggling Students *Intervention in School and Clinic* May 1, 2015 50: 291-296, University of Texas at Austin, USA.

[19] Proctor. B & Proctor. (2012) Relationships Between Cattell–Horn–Carroll (CHC) Cognitive Abilities and Math Achievement Within a Sample of College Students With Learning Disabilities, *J Learn Disabil*, May/June 2012; 45(3) : pp. 278-287., first published on May 12, 2011.

[20] Shin. M & Bryant. P. Diane (2015)A Synthesis of Mathematical and Cognitive Performances of Students With Mathematics Learning Disabilities, *J Learn Disabil* , January 1, 2015 48: 96-112, University of Texas at Austin, USA.

[21] Sideridis. G & Susana Padeliadu(2013) Creating a Brief Rating Scale for the Assessment of Learning Disabilities Using Reliability and True Score Estimates of the Scale's Items Based on the Rasch Model, *J Learn Disabil* March/April 2013 46: 115-132, first published on June 17, 2011doi:10.1177/0022219411407924, University of Crete, Rethymno, Greece.

[22] Swanson. H. Lee (1994) Short-Term Memory and Working Memory: Do Both Contribute to Our Understanding of Academic Achievement in Children and Adults with Learning Disabilities? *J Learn Disabil*, January 1994; 27(1) : pp. 34-50, University of New Mexico.

[23] Swanson. H. Lee (2011) Dynamic Testing, Working Memory, and Reading Comprehension Growth in Children With Reading Disabilities, J Learn Disabil, July/August 2011; 44(4) : pp. 358-371, University of California, Riverside, Riverside, CA, USA.

[24] Swanson. H. Lee et al (2009) Working Memory, Short-Term Memory, and Reading Disabilities: A Selective Meta-Analysis of the Literature, *J Learn Disabil*, May/June 2009; 42(3) : pp. 260-287., first published on March 2, 2009, University of California-Riverside, lee.swanson@ucr.edu

[25] Swanson. H. Lee, Kehler. P & Olga Jerman(2010) Working Memory, Strategy Knowledge, and Strategy Instruction in Children With Reading Disabilities, *J Learn Disabil*, January/February 2010, 43(1): pp. 24-47., first published on, University of California.

[26] Torbeyns. J et al (2004) Strategy Development in Children with Mathematical Disabilities: Insights from the Choice/No-Choice Method and the Chronological-Age/ Ability-Level Match Design, *J Learn Disabil* April 1, 2004 37: 119-131, Fund for Scientific Research in Flanders,

[27] William. F. Brewer &, Cristina. S(2012)The Metamemory Approach to Confidence: A Test Using Semantic Memory, *Journal of Memory and Language*, 67 (1): p59-77 Jul 2012.