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## Draft literature review

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**Abstract:** This document reviews the most important publications relevant to the FIRST project. At this stage no attempt was made to synthesise them as they can be used to produce different types of surveys (e.g. for readers from the healthcare sector or researchers from language technology).

### Annotated bibliography

Abedi, J., Leon, S., Kao, J., Bayley, R., Ewers, N., Herman, J., & Mundhenk, K. (2010). *Accessible reading assessments for students with disabilities: The role of cognitive, grammatical, lexical, and textual/visual features*. Minneapolis, MN: University of Minnesota, Partnership for Accessible Reading Assessment.

The population for this study are students in 8<sup>th</sup> grade in three states. Because the states were not selected randomly, the level of generalizability of this sample to the population is limited and the results should be interpreted with caution when generalizing to the entire 8<sup>th</sup> grade student population.

They evaluated current English language arts standardized assessments from three states to determine their cognitive, lexical, grammatical, and textual/visual complexity using differential item functioning (DIF) and discriminant analysis.

The reading assessments from three states were rated on 21 accessibility features in five general categories: (1) cognitive complexity, (2) textual/visual complexity, (3) lexical A complexity, (4) lexical density B complexity, and (5) grammatical complexity. The cognitive complexity category included measures of passage and item types, depth of knowledge, and scope. The textual/visual complexity category included column count, number of pages, words per page, number of typeface changes, number of point size changes, number of font changes, and number of unnecessary visuals. The lexical A complexity category included a count of the number of words greater than seven letters in items and paragraphs, the number of relevant paragraphs, and the number of words in items and relevant paragraphs. The lexical density B complexity category included the average lexical density (total unique words per page/total words per page), and the number of uncommon words in items and relevant paragraphs. The

grammatical complexity category included counts of the number of subordinate clauses, complex verbs, passive voice verbs, relative clauses, entities, and noun phrases.

Two different approaches were employed for analysing the data: (1) a Multiple Discriminant (MD) approach and (2) a Differential Item Functioning (DIF) approach. In the MD approach, we examined the impact of the accessibility features between students with and those without disabilities across the entire test; and in the DIF approach, Differential Bundle Functioning (DBF) and Differential Test Functioning (DTF) approaches were applied to see the impact of the accessibility features on the entire test as well as on the individual test items or a group of test items (bundle of items) that share specific accessibility features.

Ali-Hassan, N. F. and Lada A. Microsoft. *Expressing social relationships on the blog through links and comments*. Academic School of information University of Michigan.

Three blogs on line in: Kuwait, Dallas/Fort, United Arab Emirates.

Comparative analysis of the social network structure.

On line survey.

Blogs do enable relationships with some those new relationships later extending to other communication media an offline meetings.

Do not play large role in helping bloggers sustain their real life relationships

High degrees of reciprocity and cohesion.

Arya, D. J., Hiebert, E. H., and Pearson, P. D. (2011) *The effects of syntactic and lexical complexity on the comprehension of elementary science texts*. International Electronic Journal of Elementary Education, 4 (11): 107-125.

In this paper, the effect of syntactic complexity and lexical complexity on the comprehension of science related texts by third-grade students was assessed. It was found that comprehension was affected by lexical complexity, but not by syntactic complexity. Experiments were performed in which students were presented with different versions of a text (the original version and syntactically or lexically simplified versions). The text was then withdrawn and the students were required to complete a comprehension test. The authors noted that complex sentences contain multiple propositions that can be difficult to extract and process. However, unpacking these propositions into separate sentences breaks the connections between them. The requirement by readers to re-establish these connections places a greater inferencing burden on them, making syntactically simplified sentences more difficult to understand. The authors suggest that there is a threshold that must be established between the processing burden caused by the syntactic complexity and conceptual weight of the sentence and the burden involved in re-establishing broken discourse

links. The authors note that background knowledge is an important factor in determining this threshold. They also note that more experienced readers had less difficulty with syntactically complex sentences. This analysis has implications for the effective deployment of the syntactic processor (WP3). Operation of this component may depend on users' background knowledge, not simply the linguistically-oriented user preferences. Different parameter settings may be required for different documents.

Ávila Clemente, V.; Fajardo Bravo, I.; Gómez Puerta, J. M.; Hernández Abellán, A.; Ferrer Manchón, A. and Tavares Sánchez-Monge, G. (2010). *Intellectual disability, easy reading and ICT: towards a scientific evidence based practice. Identification of reading comprehension difficulties in use of internet in youngsters with intellectual disability for the development of a digital newspaper*. Universidad de Valencia y Universidad de Alicante/APSA.

The sample was composed by 20 people with intellectual disability aged 16 to 24. All of them attended a special centre of vocational training.

The participants expressed their interests and difficulties about reading and searching texts in Internet. They also participated in obtaining scientific evidence about methods for translation of texts into easy-reading texts. Finally, these data was applied in the design and deployment of digital newspaper [www.noticiasfacil.es](http://www.noticiasfacil.es)

Some data was: (a) enjoyment of reading depends largely on the level of intellectual disability and the need for support, (b) very few of them consider reading as a hobby or a form of entertainment, (c) reading is a frustrating task for them (d) they prefer short texts with pictures, (e) they use Internet to find information, access social networking and entertainment (videos and music), (f) none of them reads news in newspapers or on the Internet because they think texts on the Internet are difficult to understand, (g) all of the participants highly appreciated the creation of a digital newspaper based on easy-reading methods.

Benton, L., Ashwin, E., Johnson, H., Grawemeyer, B., and Brosnan, M. (2011) IDEAS: An Interface Design Experience for the Autistic Spectrum. In: *CHI EA 2011 - 29th Annual CHI Conference on Human Factors in Computing Systems, Conference Proceedings and Extended Abstracts*. New York: Association for Computing Machinery (ACM), pp. 1759-1764. (Conference on Human Factors in Computing Systems - Proceedings)

The research described in this paper investigates the inclusion of people with ASD in participatory design of user interfaces. It notes that people with ASD can benefit from this as it enables them to directly ensure that the interface is personalized to their individual needs. It has the advantage that intermediaries do not serve as proxies for end users, but end users themselves have direct input in the design process.

The feasibility of this design paradigm should be investigated in FIRST.

*“The generation of accessible multimedia documents containing automatically produced novel or derived elements on the basis of the originals is motivated by numerous studies. In previous work, it has been shown that provision of concise summaries of documents indicating their gist, pre-reading questions designed to activate and better exploit readers' background knowledge (Carr and Thompson, 1996; Pressley and Afflerbach, 1995), and illustrative images enabling —picture walks// through documents (Clay, 1991) all facilitate reading comprehension. Presenting documents in the form of cloze tests to be completed by readers with ASD has also been shown to improve their comprehensibility (O'Connor and Klein, 2004). One variant of this approach, in which phrases in the document are selectively replaced by pronouns and readers are challenged to resolve those references, was also found to facilitate comprehension of the overall gist of the document (Fossett, 2004).”*

Boets, B.; Vandermosten, M.; Poelmans, H.; Luts, H.; Wouters, J.; Ghesquière, P. (2011). *Preschool impairments in auditory processing and speech perception uniquely predict future reading problems*. Research in Developmental Disabilities, Volume 32, Issue 2, March–April 2011, Pages 560-570.

Kindergarten and 1<sup>st</sup> grade children who receive a dyslexia diagnosis in 3<sup>rd</sup> grade.

The current longitudinal study shows impairments in auditory frequency modulation (FM) detection, speech perception and phonological awareness in kindergarten and 1<sup>st</sup> grade in children who receive a dyslexia diagnosis 3<sup>rd</sup> grade. FM sensitivity and speech-in-noise perception in kindergarten uniquely contribute to growth in reading ability, even after controlling for letter recognition and phonological awareness.

These findings indicate that impairments in auditory processing and speech perception are not merely an epiphenomenon of reading failure. Although no specific directional relations were observed between auditory processing, speech perception and phonological awareness, the highly significant concurrent and predictive correlations between all these variables suggest a reciprocal association and corroborate the evidence for the auditory deficit theory of dyslexia.

Bölte, S.; Golan, O.; Matthew, Goodwin S. and Zwaigenbaum, L. (2010). *What can innovative technologies do for Autism Spectrum Disorders?*. Autism 2010 14: 155.

Computer technology and the Internet are already beginning to change the lives of many people with ASD. Computers can help compensate for verbal and interaction problems and facilitate exchanges between people with ASD, experts and others. They also enable new ways of communication, socializing, learning and employment options.

Burne, B.; Knafelc, V.; Melonis, M.; Heyn, P.C. (2011). *The use and application of assistive technology to promote literacy in early childhood: a systematic review*. Burne B - Disabil Rehabil Assist Technol - 01-JAN-2011; 6(3): 207-13.

The findings from this review support the scarcity of empirical research demonstrating the benefit of AT to promote emergent literacy among young children with disabilities. They also found a need for evidence supporting education approaches for the proper use of AT in early childhood literacy as well as little family knowledge regarding the implementation and instructional use of AT.

Carney, R.N and Levin, J.R (2002). *Pictorial Illustrations Still Improve Students' Learning From Text*. Educational Psychology Review, Vol. 14, No. 1,

Review study. This pictures-in-text review conclude with a list of 10 practical suggestions for educators, or what might be called "10 tenets for teachers."

1. Select pictures that overlap with text content.
2. Easy-to-follow texts that are highly concrete and engaging (e.g., interesting narrative passages) readily elicit visual imagery in students and therefore are unlikely to yield additional cognitive benefits from the inclusion of pictures.
3. Prerequisite basic reading skills are required on the part of the student for positive effects of pictures to emerge. At the same time, young children or other students lacking such skills can improve their listening comprehension and recall with well-selected pictorial accompaniments.
4. Choose pictures with an eye toward the desired functions they are to play.
5. In general, the more complex the text, the more likely that pictures are helpful.
6. To yield the maximum benefits from pictures as text adjuncts, direct students to do something with the picture that yields a controllable product, such as labelling the features of the illustration.
7. Computer software that uses integrated or pop-up displays may be more effective than those using split displays in which the picture and text appear in separated locations on the screen.
8. You may also want/need to consider students' individual learning styles.
9. Realize that even professionally designed pictures and illustrations in textbooks are not necessarily perfect, nor easy for students to comprehend or remember.
10. Finally consider the use of transformational (mnemonic) pictures as pictorial adjunct aids to text.

Cohen, D.; Plaza, M.; Perez-Diaz, F.; Lanthier, O.; Chauvin, D.; Hambourg, N.; Wilson, A. J.; Basquin, M.; Mazet, P.; Rivière, J. P. (2006). *Individual cognitive training of reading disability improves word identification and sentence comprehension in adults with mild mental retardation*. Research in Developmental Disabilities, Volume 27, Issue 5, September–October 2006, Pages 501-516.

Twenty adult volunteers, with both reading disabilities (RD) and mild mental retardation (MR), underwent 60 consecutive weeks in a cognitive remediation program, and were compared with 32 untreated control subjects. The experimental group showed a significant improvement in word identification, as measured by oral production ( $p = 0.0004$ ) or silent reading ( $p = 0.023$ ), and sentence comprehension ( $p = 0.0002$ ). Adults with MR appear to benefit from new approaches in the field of RD.

Connors, F., Rosenquist, C. Sligh, A, Kiser, J. (2006). *Phonological reading skills acquisition by children with mental retardation*. Research in Developmental Disabilities, Volume 27, Issue 2, March–April 2006, Pages 121-137

Twenty children with mental retardation, age 7–12; control group matched on age.

Both groups completed a phonological reading skills program over approximately 10 weeks. As a result of the instruction, group with mental retardation was better able to sound out learned and transfer words compared to a control group matched on age, IQ, non-word reading, language comprehension, and phonemic awareness. Final sounding out was predicted by beginning reading skill in both groups, by phonemic awareness and articulation speed in the control group only, and by general language ability in the instruction group only. Neither IQ nor verbal working memory correlated significantly with final sounding out ability in either group. It is suggested that the instruction succeeded in compensating for weaknesses in phonemic awareness and speech articulation, but favoured those who had better language skills.

Coppens, L. C.; Gootjes, L.; Zwaan, R. A. (2012). *Incidental picture exposure affects later reading: evidence from the N400*. National Library of Medicine. Brain and language 122. 1 (July 2012): 64-69.

Language comprehenders form a mental representation of the implied shape of objects mentioned in the text. In the present study, the influence of prior visual experience on subsequent reading was assessed. In two separate phases, participants saw a picture of an object and read a text about the object, suggesting the same or a different shape.

When the shapes in the two phases mismatched, ERPs during reading showed a larger N400 amplitude than when the shapes matched, suggesting that a picture presented incidentally 15 min earlier affected reading. These results further strengthen the case for the interaction of language and visual experience during language comprehension.

Cox, D. (2007). *Oral reading performance and the synergy of fluency, comprehension and motivation: a case study of a six grade class*. Texas Tech University.

ASD are not able to construct an understanding of the text by using their background knowledge. Motivation is one concept that continually surfaces as an important focus in reading and learning to read, particularly for adolescents. To improve fluency often results in improve comprehension (Repeated readings). Fluency is part of a developmental process of building decoding skills that will form a bridge to reading comprehension and that will have a reciprocal, causal relationship with reading comprehension. “Fluency has been shown to have a ‘reciprocal relationship’ with comprehension, with each fostering the other”.

Crespo, N. and Caceres, P. (2006). *La comprensión oral de frases hechas: un fenómeno de desarrollo tardío del lenguaje*. Revista de lingüística teórica y aplicada. (2006) 44 (2), 11, pp 77-99.

Objective: This article reports on the development of school children's oral comprehension of idioms having a metaphorical content. They classify the idiomatic units into collocations, phrases, and sayings.

Significant differences in the degree of comprehension of metaphorical utterances in all age groups are reported as the children's ages increase. Non-parametric contrasts help determine that –although all utterances were relatively easy to understand– the collocations obtained a better score, followed by the sayings, the phrases being the most difficult to understand. It was further established that a child showing a high level of comprehension of collocations also reaches a high level of comprehension of phrases and sayings; the opposite occurs among the children who present a low level.

Crespo, N., Alfaro, P. and Pérez, D. (2008). *How do children understand statements? Possible influences of transparency and familiarity*. Onomázein, (2008) 17: 95-111.

Late speech development –after the age of six– involves the comprehension of figurative statements. However, not all of these structures are learned in the same manner or at the same speed. Frequencies of use of a given statement and its greater opacity or transparency influence the relationship between the literal form and its figurative meaning. Within this framework, this paper aims at theoretically and operatively defining transparent and opaque, familiar and unfamiliar statements and, at the same time, at gaging, by means of interactive software, the performance of 77, 6-10-year-old Chilean students. Results show that differences in scores per age –for both kinds of statements– were significant only if the achievement of 10-year-olds' was compared with the scores obtained by the younger participants and that acquisition seems to improve significantly at that age. As far as the differences between the comprehension of familiar, transparent utterances and unfamiliar, opaque statements is concerned, each age group showed that they had more difficulties with the latter and, although the gap in the scores obtained by both kinds of utterances narrows in the 10-year-olds, differences were significant in all cases.

Channell, M. M.; Loveall, S. J.; Conners, F. A. (2012). *Strengths and weaknesses in reading skills of youth with intellectual disabilities*. Research in Developmental Disabilities, Volume 34, Issue 2, February 2013, Pages 776-787.

Reading-related skills of youth with intellectual disability (ID) were compared with those of typically developing (TD) children of similar verbal ability level.

The group with ID scored lower than the TD group on word recognition and phonological decoding, but similarly on orthographic processing and rapid automatized

naming (RAN). Further, phonological decoding significantly mediated the relation between group membership and word recognition, whereas neither orthographic processing nor RAN did so. The group with ID also underperformed the TD group on phonological awareness and phonological memory, both of which significantly mediated the relation between group membership and phonological decoding.

These data suggest that poor word recognition in youth with ID may be due largely to poor phonological decoding, which in turn may be due largely to poor phonological awareness and poor phonological memory. More focus on phonological skills in the classroom may help students with ID to develop better word recognition skills.

Chun, D. M.; Plass, J. L. (1997) *Research on Text Comprehension in Multimedia Environments. Language, Learning & Technology*, 1-1, pp 48-69. July 1, 1997.

Addresses reading in a second language (L2). The authors develop a model of L2 reading comprehension based on prior research in L2 reading comprehension and L2 reading comprehension with multimedia. They note that multimedia (images) provides information “in parallel” with sequential text processing.

Mayer (1984) specifies three types of aid for text comprehension:

- (a) aids for selecting information: to focus the reader's attention on certain aspects of the target information and thus improve the chance that this information is processed.
- (b) aids for building internal connections: to support the reader's building of internal connections among the units of information presented, that is, organizing the presented information into a coherent structure of the logical relations among idea units in the text.
- (c) aids for building external connections: to help the reader build connections between the ideas in the text and an existing mental model, thus integrating these new ideas into the existing mental model (Mayer, 1984; Resnick, 1982).

Chun et al. (1997) note that multimedia can be used to provide such assistance:

*“we postulate that different cognitive processes are involved in micro level processing and macro level processing of multimedia information. On a micro level (e.g., vocabulary acquisition), the presentation of visual information contiguously with verbal information results in the construction of referential connections between the verbal and the visual mental representations of the material, and the storage of the information in two different systems, a verbal and a nonverbal system (dual coding). On a macro level (e.g., overall **text comprehension**), visual information serves as an aid for text comprehension and functions as supplemental information that is added to the mental model of the text by mapping the analogue visual representation onto the analogue mental model. The visual information can aid in text comprehension in **three different functions**: (a) in selecting information, (b) in organizing the selected*

*information into a coherent structure of propositions using cognitive schemata, and (c) in integrating these propositions into the mental model. Consequently, visual material to support vocabulary acquisition has to be designed differently from visual material to aid text comprehension, depending on the cognitive processes to be supported. It can be expected, however, that under some circumstances the use of different presentation modes of information can have deleterious effects in the processing of the information. This will be the issue of the following section.”*

The authors note two caveats in the use of multimedia aids:

- (a) Task interference, especially in time pressured situations where there may not be time to both read a text and process an image. This is most problematic when both stimuli are presented through the same mode (e.g. visual text and image). Simultaneous delivery of speech and text is not so problematic.
- (b) Pictures may be more effective than video multimedia as more processing has been found to be invested in pictures than videos. Video tends to evoke superficial processing.

In terms of users, the authors observe that:

- Good verbal ability implies greater benefits obtained from multimedia aids.
- Spatial ability correlates with readers who are slower but who have better recall of texts.
- Some users respond well to visual cues, some respond better to auditory cues. In FIRST, we infer from this that personalization is essential.
- Access to pre-reading materials activating background knowledge of the topic are very beneficial in reading comprehension.

Clay, M. (1991) *Becoming literate: The construction of inner control*. Portsmouth, NH: Heinemann.

This work proposes a methodology named “picture walks” that is used to introduce novice readers to new texts. The approach has been shown to have significant effects on reading ability. In the approach:

- The teacher conducts a new book introduction as a conversational, social interaction around the text.
- The conversation prompts student engagement in activating background knowledge and experiences that relate to the text.
- The teacher provides an overview of the plot, theme, or important ideas.
- The teacher directs the children’s attention to text structure and language structure.
- Teachers use the book’s language structure (e.g. verb tense, predictable patterns) and vocabulary in the conversation about the book.

- Teachers may direct attention to using letter-sound relationships in one or two places in the text.

Pictures in books that are being read can serve as the basis for talking about the events described in the book and to provide background on the overall content of the book. The approach is relevant for all novice readers.

Department of Health (UK) (2009) *Basic guidelines for people who commission Easy Read information*. Department of Health.

A methodology for the preparation of documents for people with learning disabilities. The guiding principles are:

- (a) Ensure that people with learning disabilities are involved from the start.
- (b) Provide information through a range of channels and formats.
- (c) Ensure that your information meets users' needs.
- (d) Clearly signpost to other services.
- (e) Always define responsibility for information provision.

Easy read documents are to be prepared in accordance with the following guidance:

- **Rule 1:** *Each idea needs both words and pictures – both pictures and words are important.*
- **Rule 2:** *Pictures and words go next to each other – this helps more people to understand the information.*
- **Rule 3:** *Make sure that it is clear which pictures support which bits of text.*
- **Rule 4:** *Pictures must be easy to understand.*
- **Rule 5:** *Pictures should go on the left.*
- **Rule 6:** *Pictures can be drawings, photographs or other images.*
- **Rule 7:** *Make sure that pictures are as big as possible.*
- **Rule 8:** *Words must be easy to understand.*
- **Rule 9:** *If you use difficult words, say what they mean using easy words.*
- **Rule 10:** *Words go on the right.*
- **Rule 11:** *Words must be written clearly – a font like Arial is good.*
- **Rule 12:** *Words must be big – a font size of at least 14 point is good.*
- **Rule 13:** *Each sentence must be short as possible – more than 15 words is harder to read.*
- **Rule 14:** *Each document must be short – more than 20 pages is too long.*

These rules possibly cater for people with greater reading difficulties (lower IQ) than people with high functioning autism.

Detry, F. (2008). *Consideraciones metodológicas para el tratamiento de las expresiones idiomáticas en clase de español como lengua extranjera (ELE)*. Universidad de Gerona. Lingüística en la Red.

This article makes some methodological proposals about how to adapt the presentation and treatment of idioms to the specific context of its teaching to foreign learners. More precisely, it focuses on different issues related to the way of grouping those expressions, their constitutive components (headword), the use of examples and definitions, their synonymous and antonymous relationships and some of their pragmatic characteristics.

Douglas, K.H.; Ayres, K.M; Langone, J. and Bramlett, V.B. (2011) *The effectiveness of Electronic Text and Pictorial Graphic Organizers to Improve Comprehension Related to Functional Skills*. *Journal of Special Education Technology*, 26 (1), 43-57.

Three students with mild to moderate intellectual disabilities A multiple-probe design across participants evaluated the functional relationship between the graphic organizer and comprehension. The students in this study used computer-based instruction to learn how to use a pictorial graphic organizer as a visual prompt, and they were able to generalize this and follow a text-based recipe. The grouping of pictures strategically on a graphic organizer also assisted students with their comprehension of the text. Students were able to answer questions about the text by referring to the pictures in the correct column of their graphic organizer.

Eikeseth, S.; Jahr, E. (2001). *The UCLA reading and writing program: an evaluation of the beginning stages*. *Research in Developmental Disabilities*, Volume 22, Issue 4, July–August 2001, Pages 289-307.

Participants were four children with autism, who scored within the mentally retarded range on standardized tests of intellectual, adaptive, and language functioning, and three 3-year-old non-disabled children.

This study was designed to evaluate early parts of the program. Acquisition, transfer, and maintenance of “reading and writing” skills was examined and compared with the acquisition, transfer, and maintenance of sign language. A simultaneous-treatment design was employed to compare the rate of acquisition of “reading and writing” skills to the rate at which the participants acquired receptive and expressive signs.

For the participants with autism, acquisition of “reading and writing” was more successful than receptive and expressive signing on all variables assessed. All non-disabled participants acquired all of the “reading and writing” and sign language skills, but participants with autism did not. However, “reading” was acquired slightly quicker by the participants with autism than the non-disabled participants, and the participants with autism also showed some evidence of better transfer and maintenance than the non-disabled participants did.

Eisenbraun, K.; Johnstone, C.; Lazarus, S.; Liu, K.; Matchett, D.; Moen, R.; Quenemoen, M.; Quenemoen, R.; Thompson, S. and Thurlow, M. (2006). *Reading and Students with Mental*

*Retardation.* Partnership for Accessible Reading Assessments and National Accessible Reading Assessment Projects (NARAP).

The intent of this brief paper is to highlight issues surrounding reading and students with mental retardation. While not a comprehensive review, it is intended to give enough of a sense of the characteristics of the students, general instructional approaches used with them, and assessment approaches and issues to generate discussion about the possible ways in which more accessible assessments can be designed for those students who are proficient readers given their diagnosis of mental retardation.

Approaches to teaching reading to students with mental retardation fall broadly into two categories. One broad category is the traditional or direct instruction approach, which teaches reading as distinct subsets of skills such as phonics and sight word recognition. The traditional approach is based on a behaviourist model, emphasizing drill and practice of a linear set of literacy skills. The second approach is a progressive, holistic approach that teaches comprehension and critical thinking along with phonological awareness, decoding, vocabulary, and reading for enjoyment. Each of these approaches has had support with some students with mental retardation and for various purposes.

Assistive technology and technology increasingly have become important supports for reading-related instruction and reading for students with mental retardation. Computer and light technology can give students with severe mental retardation the supports they need to build communication skills.

Escobedo, L. (2012). *Mosoco: A Mobile assistive tool to support children with autism Practicing Social skills in Real life situations*. CHI, 2012, Texas. CHI, 2012, Texas.

Ages: 8- 11. N= 3 ASD students. N=9 NT students. Mosoco (Mobile Social Compass). Public school California during lunch recess. Training sessions to teachers and students. Interviews and films. Mixed methods approach. Also a quantitative analysis conducted.

Interactive technology can provide a wide range of support to ASD people. ASD and NT people said Mosoco increased quality of interactions. To asses success, they measure the length in time of interaction as well as the amount of interactions.

Fossett, B. (2004) *Visual support strategies for literacy development*. In SEA Crosscurrents Magazine, Spring: 23-32.

Claims pictures will be more effective than speech multimedia because pictures are non-transient, allowing more time for information processing.

Visual support strategies include calendar activities to learn time concepts. These include cloze tests in which missing words are written on cards that also contain an illustrative picture (PCS cards). IN tasks where students correct mistakes in a written letter, errors or missing words can be signalled by indicative visual clues (pictures). We

could do this via the OpenBook system: hide the word, present the image, and ask users to complete the missing word. This article does not present much research, but describes current visual support strategies for literacy development. Many of them appear to be based on vocabulary learning.

Fossett, B.; Mirenda, P. (2006). *Sight word reading in children with developmental disabilities: A comparison of paired associate and picture-to-text matching instruction*. Research in Developmental Disabilities, Volume 27, Issue 4, July–August 2006, Pages 411-429.

The present study used an adapted alternating treatments design [Sindelar, P. T., Rosenberg, M. S., & Wilson, R. J. (1985). An adapted alternating treatments design for instructional research. *Education and Treatment of Children*, 8, 67–76] to compare paired associate and picture-to-text matching techniques for teaching a small corpus of unknown words to two children with developmental disabilities.

Results indicated that the picture-to-text matching condition was more effective than the paired associate condition for developing a small sight word vocabulary. Follow-up data for one participant showed that skills developed using the picture-to-text matching strategy were maintained 4 months after intervention. Further research is necessary to extend these findings, particularly in terms of the development of larger sight word vocabularies and the transition from sight word reading to more conventional reading skills.

Franceschini, S.; Gori, S.; Ruffino, M.; Pedrolli, K.; Facoetti, A.; et al. (2012). *A causal link between visual spatial attention and reading acquisition*. *Current biology : CB22*. 9 (May 8, 2012): 814-819.

Here they ask whether pre-reading visual parietal-attention functioning may explain future reading emergence and development.

The present 3 year longitudinal study shows that pre-reading attentional orienting--assessed by serial search performance and spatial cueing facilitation--captures future reading acquisition skills in grades 1 and 2 after controlling for age, nonverbal IQ, speech-sound processing, and non-alphabetic cross-modal mapping.

Their findings provide the first evidence that visual spatial attention in pre-schoolers specifically predicts future reading acquisition, suggesting new approaches for early identification and efficient prevention of dyslexia.

Freyhoff, G., Hess, G., Kerr, L., Tronbacke, B., Van Der Veken, K. (1998) *Make it Simple: European Guidelines for the Production of Easy-to-Read Information for People with Learning Disability for authors, editors, information providers, translators and other interested persons*. ILSMH European Association.

This report forms part of a project to develop “Easy to Read Guidelines” for EU languages to ensure access to information by people with language disability.

The term “easy to read” is defined as:

- the use of a simple, straightforward language,
- only one main idea per sentence,
- the avoidance of technical language, abbreviations and initials,
- a clear and logical structure

The report goes on to state *“All unnecessary ideas, words, sentences or phrases should be avoided or removed.*

*If possible, abstract concepts should be avoided. Otherwise, the concept should be illustrated with concrete examples.”*

*“The presentation of the information is also very important. Photographs, pictures or symbols should support the text wherever possible in order to aid understanding. These illustrations must also be easy to understand and match the text clearly. The way that the text and any illustrations are laid out on the page must also be considered carefully.”*

*“An easy-to-read document can therefore be defined as one that contains only the most important information written and presented in the most direct way so that the largest possible audience can understand it.”*

The article lists the information needs of people with learning disabilities as:

- *Daily news*
- *Consumer information*
- *Rights and obligations*
- *How to access services*
- *Leisure information*
- *Transport*

The following guidelines are described in more detail:

- *Use simple, straightforward language.*
- *Avoid abstract concepts.*
- *Use short words of everyday spoken language.*
- *Use many personal words.*
- *Use practical examples.*
- *Address the readers in a respectful form.*
- *Use short sentences mostly.*
- *Cover only one main idea per sentence.*
- *Use positive language.*
- *Use active rather than passive verbs.*
- *Do not assume previous knowledge about your subject.*

- *Use words consistently.*
- *Keep the punctuation simple.*
- *Do not use the subjunctive tense.*
- *Be careful with figures of speech and metaphors if they are not very common.*
- *Be careful with numbers.*
- *Do not use words from other languages.*
- *Avoid cross references.*
- *Mention a contact address for further information, if possible.*
- *Avoid jargon, abbreviations and initials.*

Additional recommendations on layout include:

- *Never use a picture as background for the text. This can make reading the text very difficult.*
- *Try to put one sentence on one line. If this is not possible, try to have separate clauses on separate lines or break the sentence into separate lines at the points where people would naturally pause.*
- *Keep sentences together on one page.*
- *Do not fill your page with too much information. The layout and text-flow should support the structure of the text. If the text introduces a new idea, consider beginning a new page. The text should flow logically and not leapfrog across the page or be continued several pages later.*
- *Use a maximum of two typefaces. You could use one typeface for the text and perhaps one other for the headings.*
- *Use clear typefaces. A clear typeface is preferred, for example Arial, Helvetica or Times New Roman.*
- *Use a large type-size. The size of the letters should not be too small. 14 points is the recommended minimum for people with visual impairments.*
- *Be careful about how you emphasise text. Do not use block capitals and italics in the text. Use bold text or underlining for emphasis.*
- *Make sure the illustrations are in a sharp focus. Observe the quality of photographs in the printed version. If you use a photocopier to reproduce the publication, the setting copy should be printed in half-tone.*
- *Never use inverted printing (light text on a dark background). Dark print on light paper is easiest to read.*
- *Use colours for pictures, boxes, etc. if possible.*
- *Use headings and other “navigational aids”.*
- *Numbers*
  - *For dates use the full format “Saturday, 26 September 1998”.*
  - *Telephone numbers should be separated: 034-22.33.44 or 034-22 33 44*
  - *Always use the numeral and not the equivalent word - even for numbers below 10. For example 3, 67, 239.*

- *Never use roman numerals.*
- *Do not justify the text on the right hand side. A ragged right edge makes a column of text easier to read.*
- *Do not hyphenate long words at the right margin of the text. Keep words together.*

Also:

- *Do not forget to put a date on your publication.*
- *All easy-to-read publications should be clearly labelled on the title page so that customers can identify them easily.*

Fuchs, D.; Compton, D. L.; Fuchs, L. S; Bryant, V J.; Hamlett, C. L. et al. (2012). *First-grade cognitive abilities as long-term predictors of reading comprehension and disability status.* Journal of learning disabilities 45. 3 (2012 May-Jun): 217-231.

A sample of 195 first graders selected for poor reading performance.

The authors explored four cognitive predictors of later reading comprehension and reading disability (RD) status. In fall of first grade, the authors measured the children's phonological processing, rapid automatized naming (RAN), oral language comprehension, and nonverbal reasoning. Throughout first grade, they also modelled the students' reading progress by means of weekly Word Identification Fluency (WIF) tests to derive December and May intercepts.

The authors assessed their reading comprehension in the spring of Grades 1-5. With the four cognitive variables and the WIF December intercept as predictors, 50.3% of the variance in fifth-grade reading comprehension was explained: 52.1% of this 50.3% was unique to the cognitive variables, 13.1% to the WIF December intercept, and 34.8% was shared. All five predictors were statistically significant. The same four cognitive variables with the May (rather than December) WIF intercept produced a model that explained 62.1% of the variance. Of this amount, the cognitive variables and May WIF intercept accounted for 34.5% and 27.7%, respectively; they shared 37.8%. All predictors in this model were statistically significant except RAN. Logistic regression analyses indicated that the accuracy with which the cognitive variables predicted end-of-fifth-grade RD status was 73.9%. The May WIF intercept contributed reliably to this prediction; the December WIF intercept did not. Results are discussed in terms of a role for cognitive abilities in identifying, classifying, and instructing students with severe reading problems.

Gibbs, R.W. Jr. (1990). *Comprehending figurative referential descriptions.* J Exp Psychol Learn Mem Cogn. Jan;16(1):56-66.

Anaphoric relations (definite descriptions referring to people). Figurative referential descriptions. Understand which metaphorical expressions may be easier to understand by people. Only two types of metaphorical expressions are analysed. The

research is done from a cognitive perspective, and maybe very difficult to apply from a NLP's point of view.

Gijssel M.A.R, Ormel E.A., Hermens D., Verhoeven L. and Bosman A.M. (2011). *Semantic categorization and reading skill across Dutch Primary grades: development yes, relationship no*. J. Child Lang. 38: 356-379.

141 Dutch children, N=47 in the low grades (7 years), N=47 in the intermediate grades (9 years), N= 47 children in the higher grades (11 years).

There were administered different tasks to assess semantic categorization skills in children. Reading skills were assessed too. For each participant were calculated mean reaction time and accuracy percentages.

In second condition, were distributed the same children in the intermediate and higher grades into two groups of poor or high readers.

Reading skill was not related to semantic categorization performance.

Semantic categorization develops substantially over time (7 years old -11 years old).

Dutch children with poor reading skills don't have different performance in semantic categorization than typical readers.

Gillespie, W.H. (1998) C2008. *Semantic processing in children with reading comprehension deficits*. University of Arizona.

Children with specific reading comprehension deficit (SRCDD), have less contextual enhancement in semantic processing and a deficient suppression of anomalous semantic information.

Gold, R., Faust, M. and Goldstein, A. (2010). *Semantic integration during metaphor comprehension in Asperger Syndrome*. Brain and language. (2010) 113; 124-134.

They aimed to examine whether a deficient semantic integration process underlies the difficulties in metaphor comprehension frequently experienced by persons with AS.

They provide additional insight into the process of metaphor comprehension by focusing on a specific stage in processing, i.e., semantic integration that was examined using a high temporal resolution technique.

One of the interesting findings of this experiment is the major difficulty of AS participants to integrate the two seemingly unrelated words forming novel metaphoric expressions. But not in literal or unrelated pairs of words.

The meaning integration process for novel metaphoric expressions is effortful.

Gómez Puerta, J. M.; Hernández Abellán, A.; Ávila Clemente, V.; Fajardo Bravo, I.; Ferrer Manchón, A. and Tavares Sánchez-Monge, G. (2010). *Development of didactic resources in easy reading format for initial job training programs in a Moodle platform*. Universidad de Valencia y Universidad de Alicante/APSA.

Grynszpan, O.; Martinb, J. C.; Nadel, J. (2008). *Multimedia interfaces for users with high functioning autism: An empirical investigation*.

N=10 ASD boys. (12 yrs. 10 mos.). N=10 Neuro-typical children (8 boys, 2 girls) (9 yrs. 7 mos.). Participants had poorer performance on richer multimedia interfaces. Users lack the initiative to organizing multimodal sources of information. Alteration in the ability to contextualize, affected executive functions (Russell, 1996) and alteration in the disengagement of attention. Most difficulty when facing “open” tasks where they had to imagine several alternative solutions. There wasn’t a difference in performance between “cartoon” characters and “human”. Users learned via training when the interface was simple. Extra modalities that would stimulate typical children may seem confusing for ASD. There has to be a very clear causal link between an action and its effect.

Grynsanz, O.; Martin, J. C.; Nadel, J. P. *Human computer interfaces for autism: assessing the influence of task assignment and output modalities*.

Autistic Teenagers, N=8.13 week workshop to perform computer exercises. Experimental protocol: 11 weeks learning, 2 weeks evaluation. During the evaluation 2 interfaces were tested: one minimalist and a multimodal interface (images, voice IBM via voice, multimodal feedback). Expected to be worse at the minimalist interface, as it provided fewer helpful). Multimodal interface gave context clues to resolve the task. Dialogue understanding format: What to choose?. Small sample: non parametric statistical method (Wilcoxon test). Lack of Human Computer interfaces issues for software for autism. No registered impact of the multimodal interface (this could be due to the increased complexity introduced by multiple simultaneous signals). Design of easy-reading learning materials for Initial Vocational Training Program (PCPI) using Moodle virtual learning environment project was funded by the Ministry of Education of Spain, and it was developed by Psicotext research group at the University of Valencia and the Vocational Training Centre Camí Obert of the Intellectual Disability Association of Alicante (APSA). It produced learning materials using the mentioned methods for the PCPI subject called Vocational Training. The project followed several steps: (a) selection of materials from the Vocational Training subject, (b) selection of easy-reading guidelines for the adaptation and design of texts, (c) translation of learning materials into easy-reading texts following the selected guidelines, (d) development of evaluation activities for each theme, (e) implementation of the themes in the Moodle platform, (f) training students to use Moodle, and (g) writing teacher’s guide. Six themes were developed considering employment options for people with intellectual disabilities in Spain. The application of materials in the

classroom proved to be an important motivator for students. The Spanish Ministry of Education soon will publish online the materials.

Hambley, E. (2011). *Reading Accuracy vs. Reading Comprehension in Two Children with Autism Spectrum Disorder*. Ohio State University.

The error word was similar in grammatical function to the printed word, or graphic/phonemic similarity, meaning that the error word was similar graphically and phonemically to the printed word.

The error patterns of the participants in this study suggest that these children are focusing more on accurately decoding text, and less on preserving the meaning of the passage. Since most of their errors do not change the spelling or pronunciation of the words, while many of their errors change the meaning, it may be that these children are concentrating on deciphering each word, and have more difficulty focusing on the comprehension aspect of reading.

Results of this study show a unique relationship between reading accuracy and reading comprehension.

Their errors fell under meaning similarity.

They alter the meaning of the word that they were attempting to read in the passage. This type of error could easily affect the reader's ability to answer comprehension questions correctly, as a change in meaning to one word could have a significant impact on the interpretation of that section of the passage.

Hameen-Anttila, K.; Kempainen, K. Enlund, H; Patricia, J.B. and Marjad, A. (2004). *Do pictograms improve children's understanding of medicine leaflet information?*. *Patient Education and Counselling* 55, 371–378.

Finnish elementary school children aged 7 years (n = 28), 11 years (n = 31) and 13 years (n = 31).

This study shows that the context in which pictograms are tested makes a difference in the results. Testing plain pictograms without incorporating them in their real context, e.g., in the patient information leaflet may exaggerate their usefulness in leaflet information.

Hayes, G. R.; Hirano, S.; Marcu, G.; Monibi, M.; Nguyen, D. H.; Yeganyan, M. (2010). *Interactive visual supports for children with autism*.

N=21 Teachers, therapists and neuroscientist.

Revises the traditional visual material to make it easier to manage (substituting large amounts of cards and albums). Creates collaborative schedules that allows better interaction among children. Personalizes activities by the level of skills of the child.

Eases updating databases by the use of software that can be tethered with PCs. Interesting concept of Ubicomp or pervasive computing: Integration of information processing in everyday objects and activities. User does not have to be aware of the use of the technology.

Relyies:

Too much on hardware which limits its applicability.

Only idea of Ubicomp applicable to FIRST.

Hibbing, A.N and Rankin-Erickson, J.L (2003). *A picture is worth a thousand words: using visual images to improve comprehension for middle school struggling readers*. *The reading Teacher*, 56 (8), 758-770.

Authors concluded that in their work with struggling readers they have found that the use of sketches, illustrations, picture books and movies provides students with information on which to build their internal images. By supporting students with these tools, the teacher provides students with essential elements necessary for responding to the text.

Hobson, R.P., Lee, A., Hobson, J.A. (2010). *Personal pronouns and communicative engagement in autism*. *J Autism Dev Disord*. Jun;40(6):653-64.

Pronominal anaphora (pronouns “we” and “he”).

Understanding how people with ASD use these pronouns and how frequent. Comparison with people without ASD.

Hoogeveen, Frans R.; Smeets, Paul M.; Lancioni, Giulio E. (1989). *Teaching moderately mentally retarded children basic reading skills*. *Research in Developmental Disabilities*, Volume 10, Issue 1, 1989, Pages 1-18.

Four moderately mentally retarded students participated.

The present study assessed the efficacy of a program for teaching moderately mentally retarded children basic reading skills. Central to the program were the use of a phonemic alphabet as well as the application of pictorial cueing and stimulus manipulation techniques. The program consisted of six phases. It started with the training of graphemes for vowels (Phase 1) and ended with the training of two-syllable words (Phase 6). Given time constraints, not all subjects completed all phases of the program. The training ended with the reading of one-syllable three letter words for one subject, one-syllable four letter words for two subjects, and two-syllable words for one subject. The execution of the program required an average training time of 35 hours per subject. Aspects pertaining to the validity of the program, the efficacy of the procedures, and the relevance of the learned skills are discussed.

Subsequent generalization tests revealed that all subjects were capable of reading untrained words of the same complexity as those previously trained; and to read and, to a lesser extent, understand simple sentences.

Huemer, S.V., Mann V. (2009). *A Comprehensive Profile of Decoding and Comprehension in Autism Spectrum Disorders*. *J Autism Dev Disord* (2010) 40:485–493.

Disassociation between decoding and comprehension in ASD: a pattern of relatively intact decoding skills paired with low comprehension. In contrast, the dyslexic group showed the opposite pattern of stronger comprehension and weaker decoding.

Humphries, T., Cardy, J. O., Worling, D. E. and Peets, K. (2004). *Narrative comprehension and retelling abilities of children with nonverbal learning disabilities*. *Brain and cognition*. (2004) 56; 77-88.

Nonverbal learning disabilities (NLD) are characterized by weaknesses in narrative discourse. Thirty-three children (M Age=11.7 years), 15 girls and 18 boys, listened to stories to evaluate their narrative comprehension and retelling abilities. Children with NLD (n=11) performed as poorly as children with verbal impairment (n=10) on all narrative measures. Compared to typical controls (n=12), the NLD group was poorer in comprehending inferences, but not facts. They included less of the original content than controls in their story retells, and there were strong trends suggesting fewer utterances and less variety in their vocabulary usage.

Results are discussed regarding their implications for understanding the neuropsychological profile of NLD.

Ise, E.; Blomert, I. (2011). *Support systems for poor readers: Empirical data from six EU members states*. *Journal of learning disabilities*. 2011, 44:228 on line version.

Analysing Finland, France, Germany, Hungary, Netherlands, Portugal.

A large scale questionnaire survey to mainstream teachers (n=4.210) and remedial teachers (n= 2.395).

PROREAD.

High level of students and teachers supports/better results. Frequent interactions between teachers and remedial teachers as well as between remedial teachers and diagnosticians.

High prevalence of poor reading ability.

Jiménez Hernández, D. P. (2011). *La lectura y la literatura como derechos. El caso de la discapacidad intelectual*. Universidad Nacional de Colombia Facultad de Medicina. Departamento de la Ocupación Humana Maestría en Discapacidad e Inclusión Social. Cuarta Cohorte. Bogotá, D.C., Colombia. El caso de la discapacidad intelectual. Universidad Nacional de

Colombia Facultad de Medicina. Departamento de la Ocupación Humana Maestría en Discapacidad e Inclusión Social.

Six (6) families belonging to a servicing institution to support therapeutic and social inclusion, education and employment of Bogotá; four (4) librarians of three public libraries in the city and six (6) children with Down syndrome with a mean age of 6 years old included in regular schools in the early grades of education. The present investigation included, from the qualitative methodology, a double intention, first, it was to describe to the conceptions and the practices of two actors (parents and librarians) implied in the processes of promotion of the reading (access, enjoyment and learning) with children with intellectual disability; and secondly, to describe to the attitudes and interests of 6 children with intellectual disability exposed to practices of shared reading.

The discussion generates points of agreement and disagreement between the beliefs and practices supported in the adult world, the referring research evidences to the reading in people with disability, the attitudes and interests on the reading of 6 children with intellectual disability, and its implications in the daily practices that generate situations of disadvantage or discrimination in the different scenes where the children participate.

The investigation is placed in the prospect of studies of the Human Capacity and Cultural Studies (MCCDIS), and interlaces with the factors of the social inclusion and the strategy of shared reading.

This investigation concludes that the children with intellectual disability can enjoy reading, and the implementation of practices related to reading, it promotes learning and participation in different surroundings like home and the library.

However, to recognize reading as a right is something overriding in the social and learning processes and requires of mediators who recognize reading as universal, because, that starts of the needs, interest and preferences of children. Nevertheless, there are symbolic representations that limit the participation processes of the children with disability, especially, with intellectual disability.

Just, M. A., Carpenter, P. A., Keller, T. A., Eddy, W. F., and Thulborn, K. R. (1996) *Brain Activation Modulated by Sentence Comprehension. Science*, 274: 114-116.

In this article, the authors demonstrate that the comprehension of visually presented sentences produces brain activation that increases with the linguistic complexity of the sentence. Echo-planar functional magnetic resonance imaging was used to measure the volume of neural tissue activated in each case.

In the article, the term *linguistic complexity* denotes complexity of sentence structure. This was of three different types, each of an increasing level of complexity:

1. Active conjoined (no embedded clause): e.g. *The reporter attacked the senator and admitted the error.*
2. Subject relative clause: e.g. *The reporter that attacked the senator admitted the error.*
3. Object relative clause: e.g. *The reporter that the senator attacked admitted the error.*

Sentences of each type were presented to 15 college-aged participants for whom no psychiatric conditions or mental healthcare service use was specified. For all areas of the brain, brain activation increased with sentence complexity. The authors conclude “*The answer to the question of how the brain responds to increased comprehension demand is that it recruits more neural tissue in each area of a network of cortical systems.*”

This study motivates development of software to convert clauses in complex sentences from object relative clauses to subject relative clauses.

Katz, M.G; Kripalani, S. and Weiss, B.D (2006). *Use of pictorial aids in medication instructions: A review of the literature.* Am J Health-Syst Pharm—Vol 63 Dec 1,

The use of pictorial aids enhances patients’ understanding of how they should take their medications, particularly when pictures are used in combination with written or oral instructions.

Kari-Anne B. Næss, Monica Melby-Lervåg, Charles Hulme, Solveig-Alma Halaas Lyster (2012). *Reading skills in children with Down syndrome: A meta-analytic review.* Research in Developmental Disabilities, Volume 33, Issue 2, March–April 2012, Pages 737-747.

Journal articles published before 04.05.2010 were identified by using the keyword Down\* cross-referenced to ‘reading’, ‘literacy’, ‘decoding’, and ‘reading comprehension’ were selected. A total of eight papers met the criteria for inclusion. Each study was reviewed and coded on both inclusion criteria and coding protocol before the analysis was performed. The authors examine the reading profile in children with Down syndrome by comparing the non-word decoding skills in children with Down syndrome and typically developing children matched for word recognition level.

Children with Down syndrome had equivalent non-word decoding skills to typically developing children matched for word recognition level, but showed deficits on measures of two important underlying skills, vocabulary and phonological awareness. Differences in vocabulary, but not phonological awareness, were predictive of differences in non-word decoding skills.

Kim, A.; Vaughn, S. et al. (2004). *Graphic organizers and their effects on the reading comprehension of students with LD. A synthesis of research.* Journal of learning disabilities: March/April 2004;37,2; Proquest Health and Medical Complete pag 105.

They review different studies about the improvement of reading comprehension through the use of graphic organizers. 1. semantic organizers; 2. cognitive maps with a mnemonic (displays concept relationships in a unit, TRAVEL, RELATE); 3. cognitive maps without a mnemonic; 4. Frame outlines (reflect main ideas outline).

All of them reflect the improvement, there are no significant findings depending of the graphic organizers used.

Klass, P. (2007). *When paper is the enemy*. Health Affairs, 2007; 26, 2; Proquest Health and Medical complete.

Is a description of a case: a teenager with health problems: anxiety, depression, behaviour problems, academic problems, poor self-esteem, poor relationships because he had a deficit in reading comprehension skills.

Leach et al. (2010). *The limitations of employment as a tool for social inclusion*. BMC Public health 2010, 10; 621.

Paht through life project employment. Status, psychosocial job quality, mental and physical health. N=4261 Australia longitudinal studies. Good quality of work is an important prerequisite for positive health and outcomes.

Levy, J., Hoover, E., Waters, G., Kiran, S., Caplan, D., Berardino, A., and Sandberg, C. (2012) *Effects of syntactic complexity, semantic reversibility, and explicitness on discourse comprehension in persons with aphasia and in healthy controls*. American Journal of Speech–Language Pathology, 21(2): 154 – 165, 2012.

This paper describes experiments in which 38 people with aphasia and 30 healthy control subjects were presented with passages containing 2 – 3 semantically reversible sentences that were either syntactically simple or syntactically complex. The passages were presented auditory and comprehension was assessed with the auditory and written presentation of four multiple-choice questions immediately following each passage. This was used as an assessment of discourse comprehension. In this paper, canonical or non-canonical word order of semantically reversible sentences is used to establish syntactic complexity (non-canonical word order is considered more complex). Four contrasts were made. In each case, the first example demonstrates canonical word order whereas the second demonstrates non-canonical word order:

1. Active: *The man hugged the boy.*
2. Passive: *The boy was hugged by the man.*
3. Subject relative: *The man who hit the woman kissed the daughter.*
4. Object relative: *The woman who the man hit kissed the daughter.*
5. Subject cleft: *It was the man who hit the woman.*
6. Object cleft: *It was the woman who the man hit.*
7. Transitive: *The boy was shaking the girl.*
8. Un-accusative: *The boy was shaking.*

Passages with syntactically simple sentences were better understood than passages with syntactically complex sentences. Moreover, semantically constrained sentences were more likely to be accurately interpreted than semantically reversible sentences. Comprehension accuracy on this battery correlated positively with comprehension accuracy on an existing battery.

The results show that the presence of semantically reversible syntactically complex sentences in a passage affects comprehension of the passage in both people with aphasia and neurologically healthy individuals. They also showed that reduced comprehension of syntactically complex sentences does not adversely affect comprehension of other sentences in the passage to be read. In FIRST, this study provides motivation to convert sentences from passive into active, object relative clauses into subject relative clauses, and object clefts into subject clefts.

Lobier, M.; Zoubrinetzky, R.; Valdois, S.; (2012). *The visual attention span deficit in dyslexia is visual and not verbal*. National Library of Medicine. A journal devoted to the study of the nervous system and behavior 48. 6 (June 2012): 768-773.

The visual attention (VA) span deficit hypothesis of dyslexia posits that letter string deficits are a consequence of impaired visual processing. Alternatively, some have interpreted this deficit as resulting from a visual-to-phonology code mapping impairment.

This study aims to disambiguate between the two interpretations by investigating performance in a non-verbal character string visual categorization task with verbal and non-verbal stimuli.

Results show that VA span ability predicts performance for the non-verbal visual processing task in normal reading children. Furthermore, VA span impaired dyslexic children are also impaired for the categorization task independently of stimuli type. This supports the hypothesis that the underlying impairment responsible for the VA span deficit is visual, not verbal.

McGee, G. G.; McCoy, J. F. (1981). *Training procedures for acquisition and retention of reading in retarded youth*. Applied Research in Mental Retardation, Volume 2, Issue 3, 1981, Pages 263-276.

A multiple baseline design across six sets of three words each was employed. Subjects were given probe sessions consisting of three random presentations of 18 words. Training with one of the three procedures was conducted on one set of three words until a criterion of three consecutive correct trials was met. Dependent measures were correct reading responses, errors of commission, errors of omission during probes, and trials to criterion during training.

Significant differences between procedures were demonstrated, with fading and/or delay procedures producing greater acquisition and retention than trial-and-error techniques.

Maja Roch, Elena Florit, M. Chiara Levorato (2012). *The advantage of reading over listening text comprehension in Down syndrome: What is the role of verbal memory?* Research in Developmental Disabilities, Volume 33, Issue 3, May–June 2012, Pages 890-899.

Participants were 20 individuals with Down syndrome, aged between 11 and 26 years who were matched for reading comprehension with a group of 20 typically developing children aged between 6;3 and 7;3 years. The two groups were presented with a listening comprehension test and four verbal memory tasks in which the degree of processing load and the coding modality were manipulated. The study confirmed the advantage of reading over listening comprehension for individuals with Down syndrome. Visual memory with low processing load was related to the former and oral memory with high processing load to the latter.

Malenfant, Nathalie; Grondin, Simon; Boivin, Michel; Forget-Dubois, Nadine; Robaey, Philippe; et al. (2012). *Contribution of temporal processing skills to reading comprehension in 8-year-olds: evidence for a mediation effect of phonological awareness.* Child development 83. 4 (2012 Jul-Aug): 1332-1346.

A normative sample of 615 eight-year-olds. This study tested whether the association between temporal processing (TP) and reading is mediated by phonological awareness (PA). TP was measured with auditory and bimodal (visual-auditory) temporal order judgment tasks and PA with a phoneme deletion task. PA partially mediated the association between both auditory and bimodal TP and reading, above nonverbal abilities, vocabulary, and processing speed. PA explained a larger proportion of the association between auditory TP and reading (56% vs. 39% for bimodal TP), and most of the association between bimodal TP and reading was direct. This finding is consistent with a dual-phonological and visual-pathway model of the association between TP and reading in normative reading skills.

Malenfant, N.; Grondin, S.; Boivin, M.; Forget-Dubois, N.; Robaey, P. et al. (2012). *Contribution of temporal processing skills to reading comprehension in 8-year-olds: evidence for a mediation effect of phonological awareness.* Child development 83. 4 (2012 Jul-Aug): 1332-1346.

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(56% vs. 39% for bimodal TP), and most of the association between bimodal TP and reading was direct. This finding is consistent with a dual-phonological and visual-pathway model of the association between TP and reading in normative reading skills.

Marciarille, V., Macaruso, P., Conway, L., Shankweiler, D. (2006). *Syntactically cued text facilitates oral reading fluency in developing readers*. *Applied Psycholinguistics*. 27: 423-445.

N= 35 children. First group: children 7 year olds. Second group: children 8-9 year olds.

Typically learning development.

Two conditions:

- The structure-preserving condition (SPC). The ends of lines coincided with ends of clauses.
- The phrase-disrupting condition (PDC) the line breaks always interrupted a phrasal unit.

Children were filmed reading different texts. Percentages were compared as for: correct words per minute, mistakes, false starts, fluency rating and comprehension through questions. Experiment 1: oral reading fluency is higher in the structure-preserving condition.

Experiment 2: older children find also similar results.

A benefit of keeping clausal unit intact in promoting fluent reading by facilitating the transition from one line to the next.

Mark, W.; Carpenter, B.D. (2007). *Humour comprehension in older adults*. *Neuropsychological society*. 2007, 13, 606-614.

40 younger. 40 older adults.

Test of verbal and nonverbal humour comprehension, test of cognitive flexibility, abstract reasoning, short-term memory. Older adults scored lower than younger adults on test of humour and cognitive abilities.

Age-related deficits in humour comprehension

Martin, S. and White, M. (2011). *Creating Disjunctive Logical Forms from Aligned Sentences for Grammar-Based Paraphrase Generation*. The Ohio State University Columbus, Ohio, USA.

In this paper, they present their initial steps towards merging the grammar-based and data-driven paraphrasing traditions, highlighting the potential of our approach to enhance the automatic evaluation of machine translation (MT).

The method takes as input word-level alignments of two sentences that are paraphrases and projects these alignments onto the logical forms that result from

automatically parsing these sentences. The projected alignments are then converted into phrasal edits for producing DLFs in both directions, where the disjunctions represent alternative choices at the level of semantic dependencies.

Medina Gómez, A., De la Torre, M.J. y cols. *Efectos diferenciales de la señalización sobre la comprensión de textos*. Facultad de psicología y educación.

The research carried out with students of the fourth year of Primary education deals with three issues: the differential effect produced after having added both a textual summary and a multimedia summary to a formerly established text; the distorted effect on the memorization and understanding process after having underlined secondary ideas, and the type of grouping of textual statements that any textual modification may have led to.

The results show significant improvements in the students' work after having added a summary, as well as showing less significant improvements after having added a multimedia summary. An interesting result obtained was that the underlining of secondary ideas did not achieve a significant improvement of their memorization, but a stabilization of their former degree of memorization. That is to say, the individuals under study remembered the main ideas, but not the secondary ones. We have also perceived a higher degree of grouping and hierarchy in the memorization of statements in signalled texts compared to texts that were not signalled.

Mercer L. (2009). *Understanding the literacy difficulties of students with Asperger's Syndrome in middle year's classrooms*. *Literacy learning: the middle years*, 17 (2). Pp.11-21.

Idioms and Metaphors, through Implied meaning. Describes some strategies as:

Making sense of complex instructions.

Understanding dialogues.

Answering inferential questions.

Understanding and predicting emotions of characters in a text.

Drawing on prior knowledge when reading.

Miniscalco, C.; Dahlgren, A. (2010). *Basic reading skills in Swedish children with late developing language and with or without autism spectrum disorder or ADHD*. *Research in Developmental Disabilities*, Volume 31, Issue 5, September–October 2010, Pages 1054-1061.

Sample of 21 children with language delay. Reading skills at age 7–8 years were examined in a community-representative sample of 21 screened and clinically examined children with language delay (LD) followed prospectively from 2.5 years of age. The present study aimed to (1) determine whether these children with a history of LD had deficits in basic reading skills, i.e. decoding and comprehension, compared to

the age norms of standardized tests, (2) analyse if there was a relationship between reading outcome and neuropsychiatric diagnosis by comparing three subgroups of children, LD pure, LD + ASD (autism spectrum disorder) and LD + ADHD, and, (3) determine what language measures at age 6 years were associated with the 7–8-year reading outcome. Both decoding and comprehension of single word reading were significantly below the norm for the whole LD group, where children with LD + ASD scored lowest, and children with LD highest. However, the differences between the three groups did not reach significance. Two reader groups were identified according to the results of word decoding and comprehension, respectively, resulting in the same 7 children. ANOVA revealed that the only differences on the 6-year language tests between the two groups were found on colour naming and word memory. This study has shown that children with LD and subsequently identified neurodevelopmental problems such as ASD and ADHD experience continued deficits, demonstrated also in reading skills and that the picture of the reading problems seemed to resemble those of typically developing children.

Molina Plaza, S. (2006). *The making of a bilingual dictionary of phraseological units English-Spanish/ Spanish-English with corpora examples*. Tribuna. [www.medtrad.org/panacea.html](http://www.medtrad.org/panacea.html)

The aim of this lexicographical project is to compile by semasiological order collocations, idioms and phraseological units in both languages with their equivalents. If there is not an equivalent phraseological unit, we look for a functional equivalent.

Firstly, we will include the most significant 10.000 phraseological units from the Bank of English and the British National Corpus, explaining, when necessary, with usage notes relevant cultural information. Secondly, we will look for the most relevant Spanish phraseological units and we will provide their translation into English, including 25.000 examples of real usage from the Corpus de Referencia del Español Actual.

Montanero Fernández, M. (2004). *Cómo evaluar la comprensión lectora: alternativas y limitaciones*. Revista de Educación, núm. 335 pp. 415-427.

In this paper, he presents an exhaustive theoretical and empirical review of the main approaches and techniques used in the last few years to evaluate reading comprehension skills, as well as implicit ideas and limitations, which need a critical analysis of their validity. Taking into account the type of reading inferences that is taken as the main criteria for evaluation, in most of the materials analysed, a classification for researchers and professionals I proposed to be used when selecting or designing evaluation materials and to interpret the results in a more realistic way.

Næss, K.A. B. ; Melby-Lervåg, M.; Hulme, C.; Halaas Lyster, S. A. (2012). *Reading skills in children with Down syndrome: A meta-analytic review*. Research in Developmental Disabilities, Volume 33, Issue 2, March–April 2012, Pages 737-747.

Journal articles published before 04.05.2010 were identified by using the keyword Down cross-referenced to 'reading', 'literacy', 'decoding', and 'reading comprehension' were selected. A total of eight papers met the criteria for inclusion. Each study was reviewed and coded on both inclusion criteria and coding protocol before the analysis was performed.

The authors examine the reading profile in children with Down syndrome by comparing the non-word decoding skills in children with Down syndrome and typically developing children matched for word recognition level.

Children with Down syndrome had equivalent non-word decoding skills to typically developing children matched for word recognition level, but showed deficits on measures of two important underlying skills, vocabulary and phonological awareness. Differences in vocabulary, but not phonological awareness, were predictive of differences in non-word decoding skills.

Nation, K., Clarke, P. Wright, B. J. et al. (2006). *Patterns of reading ability in children with autism spectrum disorders*. *Journal of autism and developmental disorders*, 36, 911-919.

It is a description of some strategies that can be used to improve reading comprehension skills. Think aloud through graphics organizers, story maps, questioning or summarization are the most important strategies. Working with the vocabulary, acting out definitions, searching relevant words and using context clues can improve a better understanding.

Norman, S., Kemper, S., and Kynette D. (1992) *Adults' reading comprehension: effects of syntactic complexity and working memory*. *Journal of Gerontology*, 47 (4):258 – 265, 1992.

Two experiments investigated the relationship between working memory and reading comprehension. In the first, college students, 18 to 26 years of age, and adults, 60 to 92 years of age, were given a battery of tests of working memory, a standard timed reading comprehension test, and a reading test designed to explore how syntactic complexity affects comprehension. In a follow-up study, the adults were retested on a modified version of the syntax comprehension text.

The first experiment demonstrated age group declines in working memory and reading comprehension; the second experiment demonstrated age group declines in reading rate but not comprehension. These results suggest that working memory limitations affect elderly adults' ability to process complex syntactic constructions, lowering comprehension in the timed test (Experiment I) and reducing reading rates in the untimed test (Experiment II).

These findings motivate the development of syntactic simplification programs for elderly readers. If syntactic processing is affected by cognitive decline in the elderly, this would motivate syntactic simplification for other groups with cognitive impairment.

O'Connor I.M and Klein, P.D. (2004). *Exploration of Strategies for Facilitating the Reading Comprehension of High-Functioning Students with Autism Spectrum Disorders*. Journal of Autism and Developmental Disorders, Vol. 34, No. 2.

Determine the effects of three facilitating strategies on the reading comprehension:

(1) answering pre-reading questions, (2) completing cloze sentences embedded in the text and (3) resolving anaphora by identifying.

Relevant antecedents.

25 students with mean ages 15.11. (modest sample)

- Explain the anaphors improve the comprehension.
- Offer an abstract of the passage.
- Graphic advance organizers.
- Anaphoric cuing and cloze task good to self-monitoring behaviour.

Oldreive, W.; Waight, M. (2013). *Enabling access to information by people with learning disabilities*. Tizard learning disabilities review 2013, 5-15.

Four case studies of adults with learning disabilities examining the processes of making information accessible considering the literacy and language skills.

Access to information reduce the risk of exclusion.

The professionals must provide accessible information.

Ortiz González, M. R.; García Espinel, A. I.; Guzman Rosquete, R. (2002). *Remedial interventions for children with reading disabilities: Speech Perception – An effective component in Phonological Training?* Journal of Learning Disabilities; Jul/Aug 2002; 35, 4; ProQuest Health & Medical Complete pg. 334.

35 children with reading disabilities (RD). 3 groups: younger experimental group (7 years; 1 month), older experimental group (8 years; 8 months), and control group.

The effects of two types of phonological training in children with RD were examined. One of the programs Speech Perception/Phonemic Awareness (SP/LPA) trained children in speech discrimination, letter-sound correspondence and phonemic awareness. The other program (LPA) trained children only in letter-sound correspondence and phonemic awareness. The effects of these programs were compared with a control group.

The results indicated that both experimental groups improved in phonemic awareness compared to the control group, but that only the SP/LPA group scored higher than to the control group in reading.

Oshima-Takane Y., Benaroya S. (1989). *An alternative view of pronominal errors in autistic children*. Journal of Autism Development Disorders Mar;19(1):73-85.

Pronominal anaphora.

Analysing in depth the difficulties that children with ASD have with respect to pronoun resolution. As a conclusion, only children have difficulties and not people with ASD in general.

Peeters, M.; Verhoeven, L.; van Balkom, H.; de Moor, J. (2008). *Foundations of phonological awareness in pre-school children with cerebral palsy: the impact of intellectual disability*. Peeters M - J Intellect Disabil Res - 01-JAN-2008; 52(Pt 1): 68-78.

Children with cerebral palsy (CP) and accompanying disabilities are prone to reading difficulties. The aim of the present study was to examine the foundations of phonological awareness in pre-school children with CP in comparison with a normally developing control group. Rhyme perception was regarded as an early indicator of phonological awareness, whereas non-verbal reasoning, speech ability, auditory perception, auditory short-term memory and vocabulary were regarded as foundation measures.

A number of tasks were administered to examine group differences in rhyme perception and its foundation measures. Correlations between the tasks were analysed for both groups followed by multiple regression analyses wherein rhyme perception was predicted by its foundation measures.

**CONCLUSION:** The results of this study indicate that general intelligence and speech ability (i.e. pseudoword articulation) can be seen as important facilitators of emergent phonological awareness in children with CP. These findings support the role of intelligence in the emergence of phonological awareness in children with CP. Children with CP with intellectual disabilities seem to have a disadvantage in acquiring phonological awareness, especially when their speech abilities are also impaired. However, general intelligence is not enough to predict phonological awareness as other foundation measures are also important for phonological awareness independent of general intelligence.

Plass, J.L; Chun, D.M; Mayer, R.E and Leutner, D. (1998) *Supporting Visual and Verbal Learning Preferences in a Second-Language Multimedia Learning Environment*. Journal of Educational Psychology, 90 (1,) 25-36.

103 college students who enrolled in second-year German language courses at a highly selective university in California. In the study a German text was used with a computer program that allows the students to mark key word and select one or more options: 1) hear the word pronounced in German, 2) see either the translation of the word, a picture or a video clip depicting the word. This study suggests that learners should have options for selecting and processing material presented in both visual and verbal

modes. Students learned vocabulary words best when they selected both visual and verbal annotations, and they recalled propositions best when they had the option of selecting both visual and verbal annotations and when the propositions were illustrated in a preview video. For reading comprehension of a foreign language text, it can be argued that the effect of selecting and processing both visual and verbal modes of information is moderated by individual differences in performance during the storage process of constructed meaning.

Pnina Stern, Lilach Shalev (2012). *The role of sustained attention and display medium in reading comprehension among adolescents with ADHD and without it*. Research in Developmental Disabilities, Volume 34, Issue 1, January 2013, Pages 431-439.

Two groups of adolescents (participants with ADHD and normal controls) was assessed and compared in four different conditions (standard printed, spaced printed, standard on computer screen, spaced on computer screen). In addition, participants completed a visual sustained attention task. The current study aimed at investigating the relation between sustained attention and reading comprehension among adolescents with and without ADHD. Another goal was to examine the impact of two manipulations of the text on the efficiency of reading comprehension: Spacing (standard- vs. double-spacing) and Type of presentation (computer screen vs. hand copy). Reading comprehension of two groups of adolescents (participants with ADHD and normal controls) was assessed and compared in four different conditions (standard printed, spaced printed, standard on computer screen, spaced on computer screen). In addition, participants completed a visual sustained attention task. Significant differences in reading comprehension and in sustained attention were obtained between the two groups. Also, a significant correlation was obtained between sustained attention and reading comprehension. Moreover, a significant interaction was revealed between presentation-type, spacing and level of sustained attention on reading comprehension. Implications for reading intervention and the importance of early assessment of attention functioning are discussed.

Prat, C. S., Keller, T. A., and Just, M. A. (2007) *Individual differences in sentence comprehension: A functional Magnetic Resonance Imaging investigation of syntactic and lexical processing demands*. Carnegie Mellon University, Department of Psychology. Paper 236. <http://repository.cmu.edu/psychology/236>

This paper presents research that analyses reading times and levels of cortical activation, when reading sentences that contain both syntactically complex sentences and low frequency words, in low capacity readers and high capacity readers. The research demonstrates that low capacity readers have longer reading times and higher levels of cortical activation than the more efficient high capacity readers for both types of sentences/words.

Roch, M. E.; Levorato F., M.C. (2012). *The advantage of reading over listening text comprehension in Down syndrome: What is the role of verbal memory?* Research in Developmental Disabilities, Volume 33, Issue 3, May–June 2012, Pages 890-899.

Participants were 20 individuals with Down syndrome, aged between 11 and 26 years who were matched for reading comprehension with a group of 20 typically developing children aged between 6;3 and 7;3 years.

The two groups were presented with a listening comprehension test and four verbal memory tasks in which the degree of processing load and the coding modality were manipulated.

The study confirmed the advantage of reading over listening comprehension for individuals with Down syndrome. Visual memory with low processing load was related to the former and oral memory with high processing load to the latter.

Saldaña, D.; Carreiras, M. and Frith, U. (2009). *Orthographic and Phonological Pathways in Hyperlexic Readers with Autism Spectrum Disorders*. Developmental Neuropsychology Volume 34, Issue 3, 2009.

Children with Autism Spectrum Disorders (ASD) often present poor text comprehension relative to their ability to read individual words. Some of them have been considered hyperlexic because of their outstanding word reading abilities. Although it has been suggested that these children access word reading in an atypical way, there is conflicting evidence on their use of phonological and orthographic pathways. Fourteen adolescents with ASD with word reading to text comprehension discrepancy and 12 typically developing children, all matched on word reading and chronological age, were administered different lexical and sub-lexical tasks exploring semantic, orthographic and phonological word representations and processes.

No differences were found on any of the tasks between the children with ASD and the typically developing group.

Sampedro, B.; Ferreras, A. et al. (2011). *Evaluación de las alteraciones de la comprensión de textos en diferentes tipos de lesión cerebral*. Neurología Argentina. (2011) 25.

Objectives: To design a brief battery to assess text comprehension impairments in patients with brain damage and to prove its power in distinguishing a brain injured group from their control group.

Results: Significant differences in patients and controls performance was founded in the three tests applied. This suggests that the tests are appropriate to discriminate patient from control groups. In addition, a significant proportion of patients of all diseases studied showed difficulties in texts comprehension.

Sánchez, E.; García, J.R.; Gonzalez, A. J. (2007). *Can Differences in the Ability to Recognize Words Cease to Have an Effect Under Certain Reading Conditions?* Journal of Learning Disabilities; Jul/Aug 2007; 40, 4; ProQuest Health & Medical Complete pg. 290.

A total of 154 sixth-grade primary school students (11-12 years) representing five Primary Schools in Salamanca, Spain.

In this study, they aimed to ascertain whether it is possible to create reading contexts that eliminate the impact of word recognition on reading comprehension and permit pupils with reading disabilities (RD) to attain a level of comprehension similar to that of their peers without RD. Specifically, the study compared a traditional reading situation with one of reading with aids (joint reading). In both situations, pupils' comprehension level was assessed by means of a summary and a series of inferential questions, and we controlled the effect on comprehension of word recognition, previous knowledge, rhetorical competence, and working memory.

The results showed that the aids provided during reading do not eliminate the effect of word recognition, but they do permit readers with RD to attain a comprehension level similar to that of their peers.

Segebart, L.; Petrill, S.A.; Schatschneider, C.; Cutting, L. (2010). *Conversational Language use as a predictor of early reading development language history as a moderating variable.* Journal of speech, language and hearing research; 53: 209-223.

N= 380 twins, x= 7 years.

Longitudinal study of conversational skills, formal vocabulary and reading measures.

Reported history of language difficulties moderated the concurrent relationship between conversational language and early reading at 7 years old.

Conversational language skills predicted a relatively small but significant amount of unique variance in children's early reading development, but only for children with a reported history of long difficulties.

Sentell, T.L.; Halpin, H.A. (2006). *Importance of adults literacy in understanding health disparities.* Journal of General Internal Medicine. Volume 21, Issue 8, pages 862–866, August 2006.

N=23,889

Literacy-health-race-education:

The inclusion of adults literacy reduce the explanatory power of initial variables in health disparities research.

Literacy inequity maybe an important factor in health disparities.

*Building knowledge in literacy and health.* Canadian Journal of Public Health 2006; 97. Proquest Health and Medical complete. Pg: 531.

Health and literacy share a relationship and to be recognize by policy-makers.

Sesma, H.W.; Mahone, E.M.; Levine, T.; Eason, S.H.; Cutting, L.E. (2009). *The contribution of executive skills to reading comprehension.* Sesma HW - Child Neuropsychol - 01-MAY-2009; 15(3): 232-46 MEDLINE®.

60 children (including 16 WRD and 10 RCD), ages 9-15 years.

Although word recognition deficits (WRD) are a known cause of reading comprehension deficits (RCD), other contributions to RCD, including executive function (EF), have not been fully explored. They examined the contribution of EF (working memory and planning), along with attention, decoding, fluency, and vocabulary to reading comprehension in 60 children (including 16 WRD and 10 RCD), ages 9-15 years.

After controlling for commonly accepted contributors to reading comprehension (i.e., attention, decoding skills, fluency, and vocabulary), EF continued to make a significant contribution to reading comprehension but not to word recognition skills. These findings highlight the need for consideration of the role of EF in RCD.

Seymour, M. (2010). *The Benefits of the Headsprout Reading Comprehension Program for Children with Autism.* A Masters Research Project Presented to The Faculty of the College of Education. Ohio University.

Determine the effectiveness of the online reading comprehension program for individuals with autism. The program teaches students to look for key words or phrases in sentences and students how to answer who, what, when, where, and how questions. Also teaches students to look for context clues, vocabulary, and knowledge of words and how to find meanings of words by looking at the rest of the sentence.

Shurr, J. and Taber-Doughty, T. (2012). *Increasing Comprehension for Middle School Students with Moderate Intellectual Disability on Age-Appropriate Texts.* Educational and Training in Autism and Developmental Disabilities, 47 (3), 359-372

4 middle school students ranging in age from 12–15 who were served in a self-contained classroom (less than 60% of their instructional day) setting in a suburban junior high school in a Midwestern state. This study investigated the effect of a combined visual- and discussion-based intervention on the comprehension abilities of middle school students with moderate intellectual disability when they were read typical age-appropriate texts. The intervention's positive effect Results indicate the intervention was successful in enhancing the comprehension abilities of students when read typical age-appropriate texts.

Siddiqi, A.; Kawachi, I.; Berkman, L. and cols. (2012). *Education determines a nation's health, but what determine educational outcome?* Journal of public health policy 2012 vol.33, 1,1-15.

They examined the effect of national policies on educational outcome, in particular, on adolescents reading literacy. The spending in education doesn't mean that it's an equally response (for every citizen).

Stern, P.; Shalev, L. (2012). *The role of sustained attention and display medium in reading comprehension among adolescents with ADHD and without it*. Research in Developmental Disabilities, Volume 34, Issue 1, January 2013, Pages 431-439.

Two groups of adolescents (participants with ADHD and normal controls) was assessed and compared in four different conditions (standard printed, spaced printed, standard on computer screen, spaced on computer screen). In addition, participants completed a visual sustained attention task.

The current study aimed at investigating the relation between sustained attention and reading comprehension among adolescents with and without ADHD. Another goal was to examine the impact of two manipulations of the text on the efficiency of reading comprehension: Spacing (standard- vs. double-spacing) and Type of presentation (computer screen vs. hand copy). Reading comprehension of two groups of adolescents (participants with ADHD and normal controls) was assessed and compared in four different conditions (standard printed, spaced printed, standard on computer screen, spaced on computer screen). In addition, participants completed a visual sustained attention task.

Significant differences in reading comprehension and in sustained attention were obtained between the two groups. Also, a significant correlation was obtained between sustained attention and reading comprehension. Moreover, a significant interaction was revealed between presentation-type, spacing and level of sustained attention on reading comprehension. Implications for reading intervention and the importance of early assessment of attention functioning are discussed.

Smith, G. C. (2011). *Variability in language and Reading in High-Functioning Autism*. En Mohammad-Reza Mohammadi, A comprehensive book on Autism Spectrum Disorder, (2011) 4; 63-84.

Some individuals with HFA present with excellent phonetic decoding ability yet poor comprehension, while others struggle with phonetic decoding of unfamiliar words, perhaps contributing to difficulties with reading comprehension.

Solis, M.; Ciullo, S.; Vaughn, S.; Pyle, N.; Hassaram, B. et al. (2012). *Reading Comprehension Interventions for Middle School Students With Learning Disabilities: A Synthesis of 30 Years of Research*. Journal of Learning Disabilities 45. 4 (Jul/Aug 2012): 327-40.

The authors conducted a synthesis of studies of reading comprehension interventions for middle school students (Grades 6-8) identified with a learning disability.

They identified 12 studies between 1979 and 2009 with treatment and comparison designs and 2 single-participant studies.

Findings from the studies indicate large effect sizes for researcher-developed comprehension measures. Few studies ( $n = 4$ ) reported standardized measures of reading comprehension, which indicated medium effect sizes. The majority of study treatments ( $n = 13$ ) utilized strategy instruction related to main idea or summarization.

Srivastava, P., Gray, S. (2012). *Computer-based and paper-based reading comprehension in adolescent with typical language development and learning language disabilities*. *Language, speech and hearing services in school*. 43: 424-437.

$N = 14$  adolescents with LLD.  $N = 25$  adolescents with TLD. Assessment of the reading comprehension, reading time and answering time in computer based and paper based literacy texts using non-linear texts. TLD score significantly higher than de LLD in both conditions. No within groups differences were found in both conditions: paper based and computer based texts.

Suárez-Coalla, P.; Cuetos, F. (2012). *Reading strategies in Spanish developmental dyslexics*. *National Library of Medicine. Annals of dyslexia*62. 2(July 2012): 71-81.

A group of 19 developmental dyslexics of different ages and an age-matched group of 19 children without reading disabilities completed a word naming task.

The aim of the current study was to examine the extent to which different variables of words affect reaction times and articulation times in developmental dyslexics. Children were asked to read 100 nouns that differed in length, frequency, age of acquisition, image-ability, and orthographic neighbourhood.

Stimuli were presented on a laptop computer, and the responses were recorded using DMDX software. We conducted analyses of mixed-effects models to determine which variables influenced reading times in dyslexic children.

They found that word naming skills in dyslexic children are affected predominantly by length, while in non-dyslexics children the principal variable is the age of acquisition, a lexical variable. These findings suggest that Spanish-speaking developmental dyslexics use a sublexical procedure for reading words, which is reflected in slower speed when reading long words. In contrast, normal children use a lexical strategy, which is frequently observed in readers of opaque languages.

Svein Eikeseth, Erik Jahr. (2001). *The UCLA reading and writing program: an evaluation of the beginning stages*. *Research in Developmental Disabilities, Volume 22, Issue 4, July–August 2001, Pages 289-307*.

Participants were four children with autism, who scored within the mentally retarded range on standardized tests of intellectual, adaptive, and language functioning, and three 3-year-old non-disabled children. This study was designed to evaluate early parts

of the program. Acquisition, transfer, and maintenance of “reading and writing” skills was examined and compared with the acquisition, transfer, and maintenance of sign language. A simultaneous-treatment design was employed to compare the rate of acquisition of “reading and writing” skills to the rate at which the participants acquired receptive and expressive signs. For the participants with autism, acquisition of “reading and writing” was more successful than receptive and expressive signing on all variables assessed. All non-disabled participants acquired all of the “reading and writing” and sign language skills, but participants with autism did not. However, “reading” was acquired slightly quicker by the participants with autism than the non-disabled participants, and the participants with autism also showed some evidence of better transfer and maintenance than the non-disabled participants did.

Thurlow, M. L.; Moen, R. E.; Liu, K. K.; Scullin, S.; Hausmann, K. E. and Shyyan, V. (2009). *Disabilities and Reading: Understanding the Effects of Disabilities and Their Relationship to Reading Instruction and Assessment*. Minneapolis, MN: University of Minnesota, Partnership for Accessible Reading Assessment.

This report is intended to provide enough common ground on the issues surrounding reading and students with various disabilities to facilitate discussion of accessible reading assessment. The information in this report was obtained through a broad review of literature and Web sites of national agencies and organizations, along with input and feedback from professionals in the disability areas. It is not intended to be a comprehensive research review of disabilities or reading-related issues, but nevertheless should prove useful for understanding the effects of disabilities and their relationship to reading.

Seven disabilities are discussed in the order of their prevalence. These are: specific learning disabilities, speech or language impairments, mental retardation, emotional/behavioural disabilities, autism, deaf or hard of hearing, and visual impairments. Although these disabilities do not comprise all of the possible disability categories or even the most common disabilities, they do represent those often considered most challenging for reading assessment.

This report provides: (1) an overview of the characteristics of students with each disability, (2) a description of common approaches to reading instruction for students with each disability, and (3) assessment approaches and issues that surround the assessment of reading for students with each disability.

In general, instructional approaches and techniques employed to deliver reading content for students in the seven disability categories were found to be determined not by the disability category, but by the students’ individual needs. Similarly, many assessment approaches and accommodations are selected by educators based on students’ unique needs, although some accommodations are disability-bound, for example, use of Braille for the visual impairments or blindness category. Little research is available on reading instruction and assessment for ELLs with disabilities, and the

field would benefit from further studies that investigate effective disability- and language-specific instructional and assessment approaches and strategies for this student population.

Thurlow, M. L., Dillon, D. R., Abedi, J., & Brauen, M. (2012). *Developing and researching an accessible reading assessment for students with disabilities*. Minneapolis, MN: University of Minnesota, Partnership for Accessible Reading Assessment (PARA).

Students with learning disabilities: in grade 4/5 (n = 131 in the accessible assessment; n = 113 in the proxy state assessment); in grade 8/9 (n = 401 in the accessible assessment; n = 448 in the proxy state assessment).

Students with speech-language impairments: in grade 4/5 (n = 68 in the accessible assessment; n = 72 in the proxy state assessment); in grade 8/9 (n = 23; n = 30).

The total number of non-special education students: 860 at grade 4/5 and 1158 at grade 8/9.

The project produced an approach to the assessment of reading proficiency believed to be more accessible than previous large-scale assessments used for school accountability purposes. This report summarizes the field test of this accessible assessment comparing it to an assessment considered to be less accessible for students with disabilities in grades 4 and 8.

Tjus, T., Heimann, M., and Lundälv, M. (2003) *Multimedia Enhancement of Language and Reading Skills*. In *Proceedings of Autism Europe, Lisbon, Portugal*.

This research suggests that provision of multimedia content (images, video clips, speech), together with interactive support from an intermediary, and use of a recasting strategy by teachers can improve development of reading in some children. Gains in word reading, phonological awareness, and communicative skills have been documented. In this work, multimedia is presented when users click on individual words in a text to access audible pronunciation of the word, or a visual image of the word. Pictures of events are shown if phrases are selected. The system provides a training kit for reading, including assistance in the comprehension of words and practice in the composition of sentences by selecting phrases of different syntactic category for inclusion into a user-constructed sentence. The system includes support for intermediaries to formulate tests, analyse test results, and edit lessons in terms of text, multimedia, and tests. Options are provided to personalize the look and feel of the interfaces. Overall, this training kit aims to improve the process of learning to read, rather than the comprehension of texts that are difficult to read.

Vacca, J.S. (2007). *Autistic children can be taught to read*. *International Journal of Special Education* 22:54-61. Fantasy (fiction materials).

Understanding the substance of a story or important events can be worked with:  
Bright, colourful pictures or vivid images.

Walters, K.A. (2011). *Improving reading comprehension and social skills with high functioning autism: an elementary school intervention*. Project (M.A., Child Development (Applied Settings))--California State University, Sacramento, 2011.

Good decoding sounds poor comprehension.

Detailed-focused processing.

Hiperlexia.

Phonological awareness.

Deficits in discourse.

Working with peers, teacher as intermediaries as a method to improve reading comprehension skills.

Whalon, K. (2004). *The effects of a reciprocal questioning intervention on the reading comprehension of children with autism*. A Dissertation submitted to the Department of childhood Education, Reading, and Disability Services.

Investigating the effects of reciprocal questioning strategy instruction delivered in cooperative pairs on the reading comprehension of children with ASD.

- Sample size is small, and participants were not randomly selected

- As with any treatment package, when a change in behaviour occurs it is difficult to determine if the entire package or a component of the intervention impacted that change.

Waugh, R. E.; Fredrick, L. D. (2010). *Teaching the reading of connected text through sight-word instruction to students with moderate intellectual disabilities*. Research in Developmental Disabilities, Volume 31, Issue 6, November–December 2010, Pages 1467-1474.

Sight-word instruction is the most common method of reading instruction for students with Moderate Intellectual Disabilities reported in the research literature. The purpose of this study was to go beyond instruction of single word units to instruction of multiple-word phrases

This study demonstrated the instruction of reading and comprehending individual words and connected text through the use of simultaneous prompting. Instruction progressed through a series of phases which systematically introduced various parts of speech and combinations of parts of speech. Following acquisition, students demonstrated generalization across connected text found in community environments and leisure-reading materials.

Williams, J.P. (2005). *Instructions in reading comprehension for primary grade students: A focus on test structure*. The journal of special education Spring 2005, 39, 1; Proquest Health and Medical Complete.

Students to at-risk in the second and third grade. Text structure. Teaching the students to identify themes of stories and apply those themes to real lives. An instructional program that teaches a common expository text structure, compare contrast (school text science). They improve their comprehension and they have learned to novel text, when they are given highly structure and explicit instructions that focused on the text structure.

Wyeth, P.; Summerville, J.; Adkins, B. (2011). *STOMP: An interactive platform for people with intellectual disabilities*.

N=40 adults with intellectual disabilities. Social inclusion: promotion of participation in the community activity. Shared collaborative experiences. Very good references on social inclusion. Focused on physical activities and interaction. Focus group not specifically autism. LLD not visited the hyperlinked pages.

Zancanaro, M.; Guiusti, L.; Gal, E.; Weiss. (2011). *Dimensions of collaboration on a table-top interface for children with autism*. Canada.

Field study. 8 boys ASD, ages 9-12

Three intervention task. 3 social stories with problematic social situations.

Addresses the children game culture.

Empower the facilitator.

Empower the child.

Designed to support therapist in their CBT.

Join Suite application.

Designed applications that can be carry out to therapeutic settings.

For collaborative task a touch interface is better than a multi- mice , specially for those with high levels of awareness a fluidity.

Interface offers a collaborative environment. Greater collaborative when given additional functionality when working together. Cooperative gestures: interactions via multiusers device where the system interpret the gestures of more than one user as cooperative.

Zorzi, M.; Barbiero, C.; Facoetti, A.; Lonciari, I.; Carrozzi, M. et al. (2012). *Extra-large letter spacing improves reading in dyslexia*. Proceedings of the National Academy of Sciences of the United States of America 109. 28 (July 10, 2012): 11455-11459.

A large, unselected sample of Italian and French dyslexic children. They show that a simple manipulation of letter spacing substantially improved text reading performance on the fly (without any training). Extra-large letter spacing helps reading, because dyslexics are abnormally affected by crowding, a perceptual phenomenon with detrimental effects on letter recognition that is modulated by the spacing between letters. Extra-large letter spacing may help to break the vicious circle by rendering the reading material more easily accessible.