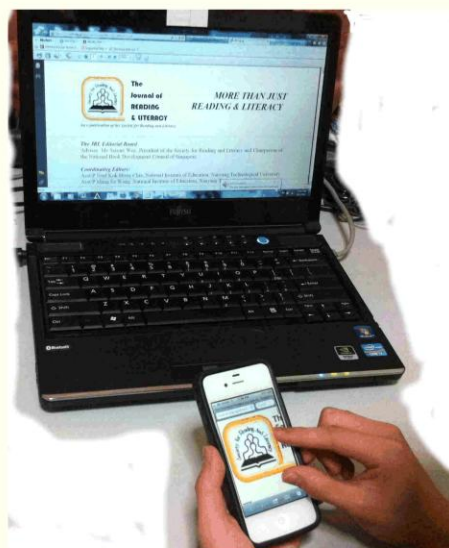
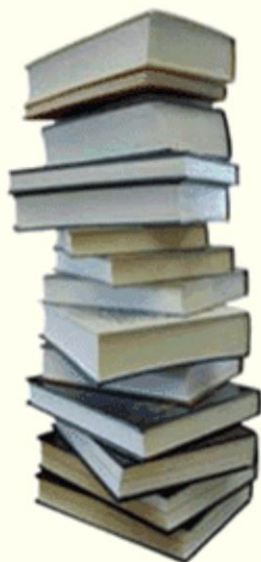




The
Society
For
Reading And Literacy

The Journal of Reading & Literacy

ISSN 2339-5001



Volume 5 2013

Theme: Disadvantaged Readers and Disabled Readers



The
Journal of
READING
& LITERACY

DISADVANTAGED READERS & DISABLED READERS

An e-publication of the Society for Reading and Literacy

The JRL Editorial Board

Adviser: Ms Serene Wee, President of the Society for Reading and Literacy and Chairperson of the National Book Development Council of Singapore

Coordinating Editors:

Asst/P Noel Kok Hwee Chia, National Institute of Education, Nanyang Technological University
Mr Norman Kiak Nam Kee, National Institute of Education, Nanyang Technological University

SRL Representative Editor:

Dr Ng Chiew Hong, National Institute of Education, Nanyang Technological University

Review Editors:

Ast/P Meng Ee Wong, National Institute of Education, Nanyang Technological University
Dr Benny Lee, Singapore Institute of Management University
Dr Winston P.N. Lee, National University of Singapore
Mr Mohd Shaifudin Bin Md Yusof, School of Humanities, Ngee Ann Polytechnic
Mr Bob T.M. Tan, Deakin University, Victoria, Australia
Dr Li Jenyi, National Institute of Education, Nanyang Technological University
Asst/P Ludwig Tan, National Institute of Education, Nanyang Technological University
Dr Gilbert Yeoh, National University of Singapore

Aims and Scope

The Journal of Reading and Literacy (JRL) is the official journal of the Society of Reading and Literacy, Singapore. This is a refereed journal with interests in reading and literacy issues in both mainstream (including adult education) and special education settings. The journal welcomes manuscripts of diverse and interdisciplinary themes in the aim of improving reading and literacy. Literacy is contextualized within a broad interpretation including traditional literacy, literacy standards, early and/or emergent literacy, comprehensive literacy, content area literacy, adolescent literacy, functional literacy, adult literacy, multimedia literacy, multicultural literacy, literacy and technology as well as any other interpretation that is of interest to the readers and the Editorial Board. Based on this broad conceptualization of literacy, assessment, measurement, evaluation, testing, programming, implementation, remediation, teaching and methodology are examined. The journal is particularly interested in papers investigating reading and literacy from the Southeast-Asian region, and how systems and practitioners are addressing literacy issues from their respective cultural and social backgrounds.

Guidelines for Submission to JRL

The JRL welcomes manuscript submissions at any time of the year on themes related to reading and literacy. Authors are completely responsible for the factual accuracy of their papers contributed to this journal. Neither the Editorial Board of JRL nor the Executive Committee of the Society for Reading and Literacy (SRL) accepts any responsibility for the assertions and opinions of contributing authors.

Authors are also responsible for obtaining permission to quote lengthy excerpts from previously published papers.

All submissions should include a cover letter stating the name/s of the author/co-author(s), organisation/institution that the author/co-author(s) is/are currently associated with, e-mail address of the corresponding author, and the contact telephone number. Papers that have been sent to other journals will not be considered for publication. Please indicate whether the paper has been published or being considered for publication anywhere else, in whole or in part. All papers will be peer-reviewed and upon acceptance for publication, the author and/or co-authors will be notified.

The typescript should conform to the following guidelines:

1. Manuscripts should be submitted electronically with the words “Submission for JRL” in the subject line to the Society for Reading and Literacy.
2. Language: English only
3. Document: Microsoft Word
4. Font and font size: Times New Roman or Arial; 12 point
5. Page limit: None
6. Margin: 1” on all sides
7. Title of paper: Top of page, capitals, bold, centred
8. By-line(s) of author/co-author(s): centred under the title
9. Name of organisation/institution that the author/co-author is associated with: centred under the by-line(s)
10. Abstract of not more than 150 words should accompany each submission and should appear immediately after the by-line(s)/name(s) of organization or institution.
11. Length: 3000-6000 words
12. Format: All authors and/or co-authors are expected to follow the guidelines of the 5th edition of the Publication Manual of the American Psychological Association (APA, 2001).
13. All figures, diagrams, illustrations and tables should be integrated in the typescript.
14. All sources cited in the paper must also appear on the References page at the end of the manuscript.
15. Submission of papers should be forwarded by electronic mail to the Editor at secretariat@srl.org.sg.

Copyright and Reprint Rights of JRL

The JRL is published by the Society for Reading and Literacy (SRL), Singapore. Hence, the SRL and JRL retain copyright of all original papers and materials. However, the author and/or co-author(s) retains the right to use, after publication in the journal, all or part of the paper in a modified form as part of any subsequent publication.

If the author and/or co-author(s) wish to use the materials in a subsequent publication, whether in whole or part, the JRL and the Society for Reading and Literacy must be acknowledged as the original publisher of the paper. All other requests for use or re-publication in whole or part, should be addressed to the Editorial Board of the JRL.

Table of Contents

<i>Message from the President of the Society for Reading and Literacy</i>	5
<i>Establishing a Psycho-educational Profile and Assessment of a Boy Suspected with Hyperlexia: A Single-subject Case Study</i> Arnold Chee Keong CHUA.....	6
<i>Narrative Storytelling to facilitate Early Literacy Skills of Preschoolers from Low Socio-Economic Status</i> Saranya ELANGO VAN	23
<i>A Brief Updated Examination on the Enigma of Hyperlexia</i> Patricia Mui Hoon NG	39
<i>Establishing the Cognitive Writing Profile of Academically Lower-achieving Students in Singapore: Why is it Important?</i> Janet Siew Poh LAW	51
<i>Specific Language Impairment: What is it? How does it affect Children?</i> Arnold Chee Keong CHUA	67
<i>Helping Dyslexic Students to write: Process Writing Approach</i> Chiew Hong NG	82
<i>Children who are Deprived Readers: From being disadvantaged to becoming Disabled</i> Noel Kok Hwee CHIA	90

Message from the President of the Society for Reading and Literacy

Serene Wee

Another year has gone by and a new year begins. Here is another issue of the e-Journal of Reading and Literacy (JRL) – the flagship of the Society for Reading and Literacy – that we have all been waiting for. Our e-journal is now in its fifth volume and the theme for this issue is on *Disadvantaged Readers and Disabled Readers*. It has attracted at least 14 contributions including two from our neighbouring countries – Malaysia and Thailand. We look forward to receiving more quality contributions from authors outside Singapore.

In this issue, seven papers have been accepted for publication after being peer reviewed. We want to welcome two new authors, Arnold C.K. Chua and Patricia M.H. Ng, for their contributions on hyperlexia. Arnold Chua has also a second paper on specific language impairment accepted for publication in this issue. It is rare for an author to have two papers accepted for publication in the same issue and I want to congratulate Arnold Chua for this achievement.

Saranya Elangovan, the first SRL Research Award winner last year, has contributed her paper based on her investigative study on the effectiveness of the SRL Reading Rocks programme for preschool children coming from low-income families. Then we have Janet S.P. Law's contribution on the cognitive equation of the writing process. Our in-house Representative Editor, Dr C.H. Ng, has also contributed a paper on how to help students with dyslexia to write. Lastly, one of our most regular contributors, Dr Noel K.H. Chia, has submitted his paper on deprived readers and how this category of readers falls within the model of reader profiles he first proposed back in 1998/1999.

Finally, I am also pleased to announce that our e-journal is currently under review by the Global Impact Factor (GIF) Australia. I want to take this opportunity to thank the members of the JRL Editorial Board for their dedicated commitments to make this e-journal a success. We are eagerly looking forward to the outcome of the GIF evaluation and hopefully in time to announce it in our next special issue, whose theme will be on the Singapore children's literature in the multicultural society.

Establishing a Psycho-educational Profile and Assessment of a Boy Suspected with Hyperlexia: A Single-subject Case Study

Arnold Chee Keong CHUA, BSc
M.Ed (Special Education) Candidate
Kits4Kids Special School, Singapore

Abstract

This paper presents a case study of a 13-years-7-month old boy who is suspected of having hyperlexia. Reading and comprehension skills were measured using a battery of assessments from the author and external party. This study aims to provide a differential diagnosis by examining and establishing a profile using various sources of psycho-educational assessment reports. Results found that the participant had average reading and spelling skills but had severe deficits in reading comprehension skills, performing badly in the subtests of making inferences in sequencing and main idea along with poor vocabulary. He was assessed to have profound impairment in cognitive functioning. With these characteristics, it can be concluded that hyperlexia, or hyperlexia per se may be present.

Key words: Diagnostic assessment, Hyperlexia, Reading, Reading comprehension, Word decoding

Introduction

Learning disorders such as Autism Spectrum Disorders (ASD), Attention Deficit Hyperactivity Disorder (ADHD), dyslexia, Down syndrome, and others are commonly known among people. When asked what “Hyperlexia” meant, not many people have heard of the term before. A survey done by Chia (2009) involving 25 parents and 36 professionals that comprised of speech and language therapists, psychologists, educational therapists, reading specialists, and teachers found that 47% responded that hyperlexia was related to ASD, 21% thought that it was associated with dyslexia, and the remaining 32% had not even heard of the term before. Such findings meant that there was not enough awareness of hyperlexia in Singapore. Perhaps this could be attributed to the low prevalence rate of HPL as compared to other disorders such as ASD, dyslexia, and ADHD. In Singapore, there is Autism Resource Centre which provides therapy services to help individuals with autism to cope with social interaction and communication skills by a team of psychologists and therapists. And for dyslexia, several centres have been set up by Dyslexia Association of Singapore to provide early screening test and remediation services for individuals with dyslexia. However, there is none being set up for hyperlexia. Unlike the United States where there is an official body, American Hyperlexia Association (AHA), a non-profit organization where speech and language therapists, educational therapists, and others come together to provide effective teaching methods to children with hyperlexia both in school and home settings.

What exactly is hyperlexia? Is it a new disorder? The preceding section briefly discusses the history, previous studies, definition, and the subtypes of hyperlexia.

Literature Review

History of Hyperlexia

The history of hyperlexia can be traced back as early as 1960s. Various researchers had been conducting their research, majority on children identified with hyperlexia. Unlike other learning disabilities like ASD, ADHD, and dyslexia, there have been few studies done on hyperlexia. According to Joshi, Padakannaya, and Nishanimath (2010), there were 2470 studies being published from 1999 to 2009 on dyslexia while only 22 studies on hyperlexia were published. The table below shows the historical development of research studies on hyperlexia and their main findings.

Historical Studies on Hyperlexia from Past to Present

Year	Author(s)	Research Design	Type of Participants	Main Findings
1967, 1968, & 1971	Silberberg & Silberberg	Case studies	Children	First to coin the term “Hyperlexia” Defined hyperlexia as having excellent word recognition than intellectual level
1968	Niensted	Case studies	Children	Defined hyperlexia with a 1-year discrepancy between word recognition and comprehension
1972	Mehegan & Dreifus	Case studies	Children	Compulsive reading behaviour Spontaneous word reading before age 5 despite low IQ, poor language development, and comprehension deficit.
1973	Huttenlocher & Huttenlocher	Case studies	Children	Three children had spontaneous reading before age 5 with disorders in cognition, language, and comprehension.

1976	Elliot & Needleman	Case studies	Children	<p>Concluded that hyperlexia is not a disorder & should not be described as a syndrome.</p> <p>Believed that hyperlexia is a unique & accelerated cognitive ability.</p>
1982	Healy	Case studies	12 children (11 boys & 1 girl between 5 – 11 yrs)	<p>Provided criteria for hyperlexia:</p> <p>(1) spontaneous word reading before 5 years of age,</p> <p>(2) impaired reading & listening comprehension, and</p> <p>(3) word recognition above expectation based on cognitive & language abilities.</p>
1987	Aram & Healy	Case studies	Children	<p>Identified 2 subtypes of hyperlexia:</p> <p>(1) superior phonetic analysis, and</p> <p>(2) superior visual analysis.</p>
1987	Welsch, Pennington & Rogers	Case studies	5 boys (4-10 yrs)	<p>Compared to IQ, hyperlexia may be operationalized as unexpected reading precocity with reading comprehension not unexpectedly deficient. A preference of phonological route to reading was observed as compared to the lexical route with an overall pattern of performance resembling the surface dyslexic subtype.</p>

1989	Rourke	Case studies	Children	Hyperlexia is associated with non-verbal learning disorder & Asperger's Syndrome.
1991	Pennington	Case studies	Children	Hyperlexia is associated with autism & right hemisphere learning disorder.
1996	Chia	Descriptive conceptual study	-	Hyperlexia is a result of cognitive breakdown in inter-textuality
1997	Richman	Case studies	Children	Identified 2 subtypes of hyperlexia: (1) language learning disorder, and (2) visual-spatial-motor learning disorder.
2002	Richman & Wood	Case studies	30 Children (19: language disorder hyperlexics, 11: non-verbal hyperlexics)	Identified 2 subtypes groups: (1) language learning disorder with good visual memory with high percentage of phonetic word errors, and (2) non-verbal learning disorder with deficits in visual spatial & visual memory, but with less phonetic errors.
2003	Kennedy	Case studies	2 adolescent males (15yrs & 19 yrs)	Excellent word recognition skills in both cases with specialized development in orthographic processing. Results supported an asset rather a deficit in that hyperlexia is not a reading disorder.

2009	Chia, Poh, & Ng	Comparative study	53 children (21 dyslexia, 5 NVLD, 12 autistic disorder, 15 Asperger syndrome)	Further identified a third sub-type as Type-III hyperlexia: (1) Type-IIIA with autistic disorder, and (2) Type-IIIB with HFAD-like symptoms.
2013	Chia & Kee	Action research	10 children	Hyperlexia with autistic-like symptoms

Previous Studies on Hyperlexia

Silberberg and Silberberg (1967) were the first to use the term “Hyperlexia” to describe individuals who possessed superior ability in word recognition that was on a higher level than their comprehension ability. In their study with 28 children with intellectual functioning ranging from severe to above average, they were able to recognize words significantly higher than their overall verbal functioning or understanding of text material. Several children were observed to possess word recognition skills before school years with one child as early as 2 years 4 months. One year later, Silberberg and Silberberg (1968) presented several case studies histories of children with hyperlexia who showed higher level of word recognition as compared to their general level of intellectual functioning. One girl aged 7 years 10 months studying in grade 2.1 could recognize words at the 4.8 grade level on the Wide Range Achievement Test, but showed poor comprehension. Another boy aged 8 years 2 months old, was in grade 3.3 instead of grade 2 at the time of evaluation. His teacher mentioned that he had superior reading ability that was far exceeding above grade level. He demonstrated excellence in his spelling skills with words correctly spelt using grade 3 level. When assessed with the Wide Range Achievement Test, his word recognition ability is at 5.7 grade level and his spelling at 5.2 grade level. There were several similar cases mentioned in the findings. These findings led to a conclusion that word decoding ability in children with hyperlexia is significantly higher than their cognitive functioning, but comprehension is impaired.

In another study by Healy (1982), there is evidence to conclude the presence of hyperlexia in 12 children whereby they exhibited excellent word decoding before age 5 but were found to be severely impaired in both listening and reading comprehension. It was also suggested that the advanced development of word decoding skills and precocious reading behaviour may impede comprehension abilities if too much attention is directed on reading without intended meaning of the text (Healy, 1982). Other studies also shown that individuals with HPL possess superior word decoding skills above their expected IQ level, usually before the age of 5 but were also severely impaired in reading comprehension (Grigorenko, Volkmar, & Klin, 2003; Nation, Clarke, Wright, & Williams, 2006; Randi, Newman, & Grigorenko, 2010). Researchers had also agreed that HPL is being characterized by superior word decoding skills way above that of reading comprehension, general cognitive functioning, and oral language functioning (Grigorenko, Volkmar, & Klin, 2003; Nation, 1999; Snowling & Frith, 1986). A case study conducted by Craig and Telfer (2005) on a child, Jason, who was diagnosed with ASD and HPL found that he started to read as early as two and a half years old and write at 18 months. During his second grade, Jason was observed to possess excellent decoding skills and reading fluency. However, he demonstrated delayed reading comprehension abilities.

HPL can also co-occur with other disorders such as ASD (Atkin & Lorch, 2006), non-verbal learning disorder (Pennington, 1991), and high-functioning autistic disorder (Chia, Poh, & Ng, 2009). According to Grigorenko and colleagues (2003) and Nation (1999), the following characteristics typically describe the definition of HPL: (1) spontaneous onset of reading without any direct instruction; (2) superior word-decoding skills before age five; (3) poor listening/reading comprehension; (4) co-morbidity with other developmental disorders like Pervasive Developmental Disorder (PDD), Asperger Syndrome, Autistic Disorder, High-functioning Autistic Disorder; and (5) an obsessive reading behaviour.

Definition of Hyperlexia

In Latin, “Hyper” means more than usual and “lexic” or “lexia” means the ability to read and understand written words. Hyperlexia, also known as direct dyslexia, refers to individuals who possessed superior recognition of print beyond the vocabulary before the age of five (Tyre & Young, 1994). According to Healy, Aram, Horwitz, and Kessler (1982), hyperlexia is a term used to describe someone who excellent word decoding skill but has severe deficit in listening/reading comprehension.

According to the American Hyperlexia Association (AHA), there is no exact definition of hyperlexia. Neither is hyperlexia listed in the Individuals with Disabilities Education Act (IDEA). To define hyperlexia, three characteristics must be present: (1) excellent word decoding ability, (2) significant deficits in comprehension and use of expressive language, and (3) social skills impairment (AHA, 1999).

Hyperlexia was not listed in both the Diagnostic and Statistical Manual of Mental Disorders-4th Edition-Test Revision (DSM-IV-TR) (American Psychiatric Association, 2000) and the International Classification of Diseases and Health Related Problems (Second Edition) 10th Clinical Revision (ICS-10-CR) (World Health Organization, 1994). But it was listed in the Educator’s Diagnostic Manual of Disabilities and Disorders (EDM) (Pierangelo & Giuliani, 2007). Under the disability category of autism of the EDM, HPL is being defined as:

“A type of syndrome often associated with autistic features characterized by above-normal ability to read coupled with below-normal ability to understand spoken language” (AHA, 2005). According to Autism Support Network (2002), HPL is a syndrome with three main characteristics: (1) early precocious or intense fascination with letters or numbers, (2) delays in verbal language, and (3) social skills deficits. Some examples of such characteristics include strong auditory and visual memory, rarely initiate conversations, engaging in self-stimulatory behaviors, and difficulty understanding abstract concepts (see section AU5.00, p.258 to 259).

Hyperlexia is often found to be associated with autism spectrum disorder (ASD). Studies have suggested that hyperlexia is a distinct syndrome associated with ASD (Burd, Kerbeshian, & Fisher, 1985; Snowling & Frith, 1986; Whitehouse & Harris, 1984). However, not all children with ASD are hyperlexic and not all children with hyperlexia are autistic

(Aaron, 1997). In order to arrive at an accurate diagnosis, besides knowing the co-morbidity of hyperlexia, a sound knowledge of the various subtypes of hyperlexia is also crucial so that any misdiagnosis can be prevented.

As hyperlexia is not a disorder by itself and that it is not a stand-alone diagnosis due to other overlapping disorders (e.g., autistic spectrum disorder), caution must be exercised when diagnosing individual who is suspected of having hyperlexia. Apart from knowing the co-existing disorder, it is also important to know which subtypes of hyperlexia that an individual has so that the correct and effective intervention program can be administered to the individual who has hyperlexia. In this case, a differential diagnosis is required by knowledgeable and experienced professionals so that there will be no possibility of misdiagnosis. The following section provides a brief discussion on the different subtypes of hyperlexia.

Subtypes of Hyperlexia

According to Richman (1997), he identified two subtypes of hyperlexia that comprised of Type-I Hyperlexia (language learning disorder) and Type-II Hyperlexia (visuo-spatial perceptual disorder) (see Figure 1).

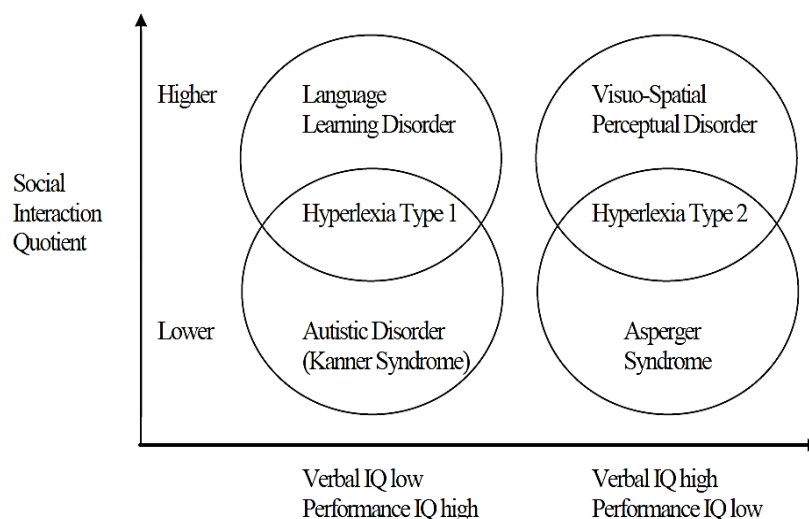


Figure 1. Richman's Model (1997) of Hyperlexia Subtypes

Type-I Hyperlexia (language learning disorder) typically represents autistic characteristics with social and communication impairments with comprehension language disorders. According to Richman and Wood (2002), there are three criteria to identify the language learning disorder of hyperlexia. These include (1) performance IQ (PIQ) of at least 90 with performance IQ of at least 12 points higher than verbal IQ (VIQ), (2) visual-motor test scores within the average range, and (3) scores of one standard deviation below average on at least two of the language tests of similarities, word fluency, or picture association.

Type-II Hyperlexia (visuo-spatial perceptual disorder) is also known as non-verbal learning disorder (NVLD) that has symptoms associated with Asperger's Syndrome where there are deficits in visual-motor orientation, spatial memory, and sensori-motor integration with superior expressive language (Kennedy, 2002). According to Richman and Wood (2002), there are three criteria to identify NVLD. These include (1) VIQ of at least 90 with VIQ of at

least 12 points higher than PIQ, (2) language test scores within the average range, and (3) scores of one standard deviation below average on at least two of the visual-motor or visual-perceptual tests of Bender Visual Motor Gestalt Test, Visual Form Discrimination or Judgment of Line Orientation, or Grooved Pegboard. Kutscher (2005) also found that children with NVLD has VIQ would be greater than 10 points as compared to their PIQ. This finding is further supported by Stewart (2007) where he discovered that children with NVLD scored highest on the verbal scale subtests of Vocabulary, Similarities, and/or Comprehension under the Wechsler Intelligence Scale for Children-Third Edition. They also performed badly on two or three of the performance scale subtests of Block Design, Object Assembly, and/or Coding.

Although Richman (1997) classified hyperlexia into two subtypes, recent findings from Chia, Poh, and Ng (2009) proposed that there were 3 categories of hyperlexia subtypes which are: (1) Type-I Hyperlexia, or Hyperlexia per se; (2) Type-II Hyperlexia: (a) Type-IIA (with Asperger-like symptoms) and (b) Type-IIB (with Non-Verbal Learning Disorder symptoms); and (3) Type-III Hyperlexia: (a) Type-IIIA (with autistic disorder) and Type-IIIB (with High-Functioning Autistic Disorder symptoms).

A thorough knowledge of the different subtypes of hyperlexia is useful as it helps professionals to provide a more accurate diagnosis, and, thus prevents the possibility of misdiagnosis. This also allows therapists, special education teachers, and parents to implement the most appropriate intervention strategies who are working with individuals that have hyperlexia.

Method

Participant

Case History

One male participant, Brendan (not his real name), was selected from the Learning Disabilities Centre in Singapore for the purpose of this study using convenience sampling. With parental consent, Brendan, who is suspected to have hyperlexia, was invited to participate in this study.

Brendan is a 13 years 3 months old Chinese boy who is currently studying in Secondary 2 in a mainstream school. Brendan's family consists of his parents and an older brother, who has been diagnosed with Autism Spectrum Disorder, is also currently studying in Secondary 4 in a mainstream school. Brendan speaks primarily Mandarin at home; therefore, this is his stronger language as compared with English.

According to his mother, Brendan has been encountering difficulties with academics from an early age. In Kindergarten, his teachers highlighted that he had many punctuation errors and did not use spacing between words in his writing. During primary school, he struggled with his school work and has been failing his academic subjects since Primary 3. In addition, Brendan has a short attention span and diminished confidence related to his academics and social interactions.

Motor Skills Development

According to his mother, both Brendan's gross motor and fine motor skills are age-appropriate during his infancy stage.

Social and Linguistic Development

Brendan appears to be a quiet and reserved boy who does not talk much. His mother reported that he started to babble and produced his first word of /mama/ at about 6 months old. In school, Brendan demonstrated very little interest in social interaction with his classmates and teachers in school.

The worries of Brendan's academic delay and poor social interaction spurred his mother to seek professional help from KK Women's and Children's Hospital in October 2012. After the visit, a referral was made for Brendan to assess his speech and language abilities. Thereafter, Brendan was assessed by a Speech and Language Therapist from Asian Women's Welfare Association Therapy and Educational Assistance for Children in Mainstream Education (AWWA TEACH ME). Brendan's mum went to seek second opinion and brought him for another psycho-educational assessment conducted by an Educational Therapist from a Learning Clinic in December 2012 to determine his developmental progress in his language ability. Outcome of Brendan's psycho-educational assessment progress report will be discussed in the Assessment Results section.

Study Design

This study used a convenience sampling with a single-subject design to establish a psycho-educational profile and evaluation of a teenage boy who is suspected of having hyperlexia.

Statement of Aim

The purpose of this case study is to provide a differential diagnosis by examining and establishing a profile of a single-subject who is suspected of having hyperlexia using various sources of psycho-educational assessment reports. This is achieved by administering a series of battery assessment and the different sources of psycho-educational assessment reports from external sources. After examining and establishing the subject's profile, this study will also seek to look into any possibility of misdiagnosis.

Assessment

The following battery assessments were administered by the author to examine Brendan's word recognition, listening and reading comprehension skills with the assessment results being discussed in the following section.

GAP Reading Comprehension Test-Third Edition (McLeod, 1990)

This test by McLeod (1990) was administered to determine participants' reading comprehension. Based on Taylor (1953), this modified cloze test has proven to be a valid and reliable measure of reading comprehension. Form B3 was used which consist of seven short cloze passages. Participants are given 15 minutes to complete all of them. When the time is up, participants are supposed to stop writing and put their writing tools down upon researcher's instruction. Two basic principles are to be followed in scoring the GAP test, (1) correct scores are only given according to the provided scoring key, and (2) since GAP tests are meant to measure reading comprehension rather than spelling ability, correct scores will still be given if participants' answers are spelt incorrectly. Upon completion of this test, scores are being analyzed using Table 4 in which participants' raw scores can be converted to reading age by summing up the total correct number of answers from the seven cloze passages. For example, a raw score of 20 will have an equivalent reading age of 8 years 7 months of the participant. This manual possessed excellent psychometric properties using

split-half method with 250 children of three different age groups with high reliability coefficients (see table below).

Year Group	Form B3	Form R3
8+	.94	.91
9+	.90	.90
10+	.91	.92

Schonell Reading Test (Schonell & Schonell, 1950)

This list consists of one hundred words with gradual difficulty. Participants are required to read the words from left to right and they need to proceed to read the next word if they are unable to read a particular word. Self-corrections are allowed during the test. One mark will be awarded for each word correctly pronounced even if the participant self-correct. Researcher is not allowed to give any verbal prompting and to hurry the participant. When the participant has completed reading all the words, a scoring table will be used to determine the reading age of the participant. The table consists of ten columns from 0 to 90 and ten rows from 0 to 9. To determine the reading age, the intersection between the left hand column and the top row has to be read off. For example, a score of 85 will correspond to a reading age of 13.06. This means the participant's reading age is 13 years and 6 months.

According to Newton and Thomson (1978), the Schonell Reading Test (Schonell & Schonell, 1950) has a split half reliability of .93, and good evidence of concurrent validity (coefficient of .84) and predictive validity (coefficient of .60, significant at $p < .001$) with scores on the Aston Index-Revised (Newton & Thomson, 1978).

Schonell Graded Word Spelling (Schonell, 1932): Test A

This test was based on 10000 children in Salford and was adjusted to the national norm by Bookbinder (1976). The spelling list consists of one hundred words with gradual difficulty (refer Appendix C). To commence the test, a writing paper and pen or pencil is required. Participants are required to write their name and date onto the paper before commencement of the test. To begin, the examiner will read each word from the list and use the word to form a simple sentence to make the intended word meaning clearer. When the participant has completed writing all the 100 words, the examiner will calculate the final score by adding all the total number of words spelt correctly, divided by 10 and add 5 to the score.

According to Clarke (1975), there is a correlation reliability of .90 between the Schonell Graded Word Spelling Test (Schonell, 1932) and the Clarke Dictation Spelling Test. This suggests that there is little advantage in the use of dictated passages (Moseley, 1979, para.3).

The Holborn Reading Scale (Watts, 1948)

This scale consists of 33 sentences and is used to assess word recognition by determining the number of correct sentences the child can read (Watts, 1948). In the event that the child is unable to read a certain word, the examiner will provide verbal prompting until he/she has failed to name four words. Every sentence has a number at the end to indicate reading age in years and months (refer Appendix D). For example, 1103 means 11 years 3 months, 1209 means 12 years 9 months, and so on.

A child's Reading Quotient (RQ) can be calculated by taking the Reading Age (RA) divided by the Chronological Age (CA) and multiply by 100. For instance, a child of 10 years 3

months (123 months) who has a RA of 1100 (132 months) will have a RQ of 132/123 multiplied by 100, which gives 107.3.

According to Buros Center for Testing (1959), “[T]here is no information regarding its reliability, but according to Nisbet (in Buros, *The Fifth Mental Measurements Yearbook*, 1959), it is ‘quite obviously a sound test’” (p.635).

Warncke Informal Comprehension Assessment (WICA) (Warncke & Shipman, 1984)

WICA is an informal assessment tool that was designed to measure students’ specific comprehension skills and it helps classroom teachers to determine students’ specific strengths and weaknesses in the areas of comprehension (Warncke & Shipman, 1984). Though the tests are meant for group administration, it can also be used for individual assessment. There are three levels of tests in WICA: (1) primary (6 to 8 years old), intermediate (9 to 10 years old), and advanced levels (11 years old and above) with a total of 18 assessment tests. Comprehension skills such as synonyms, antonyms, sequencing, cause and effect relationship, and inferential skills will be tested. During the test, students should not be told the words to be tested and whether their answers are correct or wrong.

Analysis of the assessment is interpreted using four steps: (1) each assessment is being scored by using the suitable answer keys provided. The examiner will make decision to go to the next level of assessment based on the 80% accuracy criteria (i.e., testing will be stopped when student scored less than 80% correct responses). When all the 18 levels of assessments have been administered, the total number of correct answers will be recorded on the line below the assessment, (2) the accuracy level of each student is calculated in percentages by dividing the correct numbers by the total number of items and multiply by 100. For example, a score of 4 correct responses when there were 5 items would yield 80%, (3) a student is said to have mastered a particular skill when he/she scores at least 80% on a particular measure. A weakness is observed when the student scores less than 50% on a particular assessment and (4) the student profile summary will be completed and recorded in Boxes 3-1 and 3-2 respectively.

Sohn Grayson Rating Scale for Asperger’s Syndrome (AS) and High-Functioning Pervasive Developmental Disorder (HF-PDD)

Developed by Sohn and Grayson (2005), this informal assessment was designed to assess the probability individuals of having AS or HF-PDD. There are five domains (Social and Behavioral, Behavioral, Speech and Language, Cognition, and Sensory) with a total of 58 questions in the scale. Parents of their child are required to answer all the questions by circling the number that best described their child’s behaviour with a rating scale from 1 (not true) to 4 (often true). Upon completion, all the items will be totalled up by the scorer. A high score indicates that the child or adolescent’s behaviour may interfere with daily functioning. Examples of the questions include: The child has few preferred friends, The child rarely initiates play with others, the child avoids eye contact, the child has difficulty in crowds, and the child has difficulty expressing his/her emotions appropriately. A rating scale results is provided at the end of the questions with range of scores and the probability of having AS or HF-PDD (see http://vrosario.bol.ucla.edu/forms/Sohn_Grayson.pdf).

Results Analysis

Results were analyzed from three different sources: (1) interview from participant's parents, (2) author's administration of battery of assessments, and (3) assessment from external bodies. Data collected are examined and tabulated for commonalities and differences and results are briefly discussed in the preceding section.

Assessment Results

Parents' Interview

Apart from poor academic achievement, his mother mentioned that Brendan is a bookworm when he started to exhibit a great interest in books when he was about 18 months old. He would hold on to a specific book and start flipping the pages one by one, gazing at the prints and pictures with babbling at the same time. When he was about 2 years old, he showed preoccupation with books as he would spend a great amount of time reading to himself. It was also reported that Brendan has few good friends when he was in both primary and secondary schools as he has is a quiet person who does not interact much with his classmates.

Brendan currently struggles with his English Language subject in school with failing grades in answering comprehension questions. He also has very limited vocabulary as he did not read enough. This limitation in vocabulary also caused him to have difficulty when writing composition.

Author's Battery of Assessments

Table 1 below shows a summary of the results for the assessments administered by the author with a brief discussion in the following section.

Table 1. Summary of Results of the Main Assessments Administered by Author

Types of Test	Raw Score	Total Score	Age Equivalent	Remarks
Schonell Reading Test	92	100	RA = 14:02	Within Average
Schonell Graded Word Spelling Test A	83	100	SA = 13:04	Within Average
The Holborn Reading Scale	-	-	RA = 13:06 RQ = 1.02	Within Average
GAP Reading Comprehension Form B3	28	42	CRA = 10:01	Definite Problem
WICA	Refer Table 2	Refer Table 2		Refer Table 2
Sohn Grayson Rating Scale	140	119-149	-	Mild to moderate

Note: RA: Reading Age, SA: Spelling Age, RQ: Reading Quotient, CRA: Comprehension Reading Age

Brendan's reading skills was found to be within the average range at the word level from the Schonell Reading Test with a raw score of 92 out of 100 with a reading age of 14 years 2 months as compared to his chronological age of 13 years 3 months. To assess Brendan's

word recognition in a sentence level, the Holborn Reading Scale was administered. Results found that his Reading Age (RA) was 13 years 6 months as compared to his Chronological Age (CA) of 13 years 3 months, putting him in the average range. A conversion to Reading 8Quotient was found to be 1.02, which is also in the average range.

With regards to Brendan's spelling skills, he scored 83 out of 100 from the Schonell Graded Word Spelling Test A with a spelling age at 13 years 4 months, putting him within the average range.

Though Brendan's reading and spelling skills were within the average range, his comprehension skills were found to be impaired. This is evident from the GAP Reading Comprehension Form B3 where Brendan obtained a raw score of 28 out of 42 with a comprehension age of 10 years 1 month. When compared to his CA of 13 years 3 months, results indicates that he had a severe problem in his reading comprehension. In addition, an informal assessment using Warncke Informal Comprehension Assessment (WICA) was administered to measure Brendan's comprehension skills at various levels. From Table 2, it was found that his inferential skills were very weak in sequencing at levels B and C with a score of 20% for both levels. Brendan seems to have difficulties to reconstruct the order of happening events which was indirectly stated in the passage. He also scored 40% in Level B when making inferences with main idea when he requires to select five main ideas from a list of eight statements related to a short paragraph. In addition, Brendan was also weak in the subtests of affixes (a morpheme that is added to a base word) and antonyms (words that are opposite in meanings) in level C with scores of 40% and 20% respectively.

Table2. Summary of WICA Results

Subtests	Test Level	Proficiency	Descriptors
Contractions	B	60%	Instructional
Affixes	C	40%	Frustration
Antonyms	C	20%	Frustration
Sequence	C	60%	Instructional
Inferred Sequence	B & C	Both 20%	Frustration
Inferred Cause & Effect	B	60%	Instructional
Inferred Main Idea	A	60%	Instructional
	B	40%	Frustration
Fact/Opinion	A	60%	Instructional

Note: A: 6-8 years old B: 9-10 years old C: 11 years old & above

Finally, to rule out the possibility of Brendan having Asperger's Syndrome (AS) or High-Functioning Pervasive Developmental Disorder (HF-PDD), an informal assessment using the

Sohn Grayson Rating Scale found that he had a scale of 140. This suggested that Brendan could have mild to moderate AS or HF-PDD.

External Body Assessment

(A) AWWA TEACH ME

The speech and language therapist administered Clinical Evaluation of Language Fundamentals-4th Edition (CELF-4-UK) to assess Brendan's auditory comprehension and expressive communication skills.

Results indicated that Brendan has mild receptive and expressive language impairment and when the CELF-4-UK was administered. His standard score on this assessment was 1.5 standard deviations below the mean as compared to his same-aged peers; indicating mild deficits in both using and understanding English language.

(B) Learning Disabilities Center

The Educational Therapist from the Learning Disabilities Center in Singapore administered three tests (2 standardized tests and 1 informal rating scale) to determine Brendan's current developmental progress in his language ability: (1) Wide Range Intelligence Test, (2) GAP Reading Comprehension Test, and (3) Sohn Grayson Rating Scale for Asperger's Syndrome and High-Functioning Pervasive Developmental Disorder. Results are briefly discussed in the following section.

(1) Wide Range Intelligence Test

This test assesses two domains of verbal intelligence scale and visual intelligence scale. The verbal intelligence scale used two subtests of (1) verbal analogies and (2) vocabulary while the visual intelligence scale used two subtests of (1) matrices and (2) diamonds. Brendan's General IQ of 70 suggests that he has borderline intellectual functioning. In addition, Brendan also possessed serious cognitive difficulties but average visual-spatial difficulties since his Visual IQ is more than Verbal IQ.

(2) GAP Reading Comprehension Test

Brendan's raw score of 30 placed him within the range of normal achievement in reading comprehension between 25 and 56, but on the below average level. His reading comprehension age is 11 years 9 months, suggesting that his reading age is 22 months below his chronological age. From this test, it is evident that Brendan performed poorly in his reading comprehension.

(C) Sohn Grayson Rating Scale for Asperger's Syndrome and High-Functioning Pervasive Developmental Disorder

Brendan's raw score of 94 suggested a low probability of Asperger's Syndrome (AS) or high-functioning pervasive developmental disorder (HF-PDD) as his range of scores fell within 90 to 118.

Discussion and Conclusion

From the above various psycho-educational assessment reports, both Schonell Reading Test and the Holborn Reading Scale showed that Brendan's reading skills were within average according to his chronological age. In addition, his spelling skills were also within the average range when Schonell Graded Word Spelling Test was administered. However, Brendan demonstrated poor comprehension skills as evidenced in the GAP Reading Comprehension Form B3 and the WICA, with poor inferential skills as the major concern. External assessment found that Brendan's comprehension age is 22 months below his chronological age, suggesting poor performance in reading comprehension.

From the Wide Range Intelligence Test, Brendan has poor vocabulary with a raw score of 17 and an age equivalent of 7 years old. His general IQ of 70 suggested borderline intellectual functioning. Since his visual IQ (59) is more than verbal IQ (91), this suggests that Brendan has serious cognitive difficulties but average visual-spatial difficulties.

Brendan's language and cognitive skills may impede his listening and reading comprehension. Results from the Learning Disabilities Centre in Singapore showed that he displayed difficulties in (1) sustaining a conversation topic (probably due to poor listening comprehension), (2) problem solving (cognitive deficits), (3) understanding the meaning conveyed by others when pitch, rhythm, or tone is varied (poor listening comprehension and making inferences), (4) sustaining attention, and (5) organizational skills (could explain why he is poor at making inferences in sequencing as evidenced in the WICA results).

Overall, the assessments administered by the author and external party indicated that Brendan's reading skills is within average but a severe deficit in listening/reading comprehension. Perhaps this deficiency in comprehension skills may be caused by his cognitive deficits as evidenced in the Wide Range Intelligence Test. Based on the author's various assessments administered and the psycho-educational assessment reports from external body, it can be concluded that Brendan is suspected to have hyperlexia, or hyperlexia per se.

Results from the author's assessment must be interpreted with caution as there is no formal standardized assessment performed to determine Brendan's cognitive abilities. Hence, it is recommended that standardized tests such as the Wechsler Intelligence Scale for Children-Third Edition (WISC-III) (Wechsler, 1991) or the Stanford-Binet Intelligence Scales-5th Edition (SB-5) may be used to assess Brendan's intellectual functioning in future. Other preferable standardized test instruments such as the Neale Analysis of Reading Ability – Third Edition (NARA-III) (Neale, 1999) can be used to measure Brendan's reading accuracy and comprehension skills. Other tests like the Oral and Written Language Scales (OWLS): Listening Comprehension (LC) Scale and Oral Expression (OE) Scale (Carrow-Woolfolk, 1995) may also be used to assess Brendan's expressive and receptive language. OWLS is a more holistic test as the LC scale captures lexical (vocabulary), syntactic (grammar), and supra-linguistic (higher-order thinking) skills whereas the OE scale focus on lexical, syntactic, supra-linguistic, and pragmatic use of language with excellent psychometric properties.

It is hoped that this case study may provide a better understanding of hyperlexia by knowing the definition, diagnosis and the different subtypes of the learning disability. This can be done by adopting a Standard Operating Procedure (SOP) using differential diagnosis through

psycho-educational profiling and assessment of individuals suspected to have hyperlexia. With this SOP, it is also hoped that the possibility of misdiagnosis can be ruled out during the assessment process by the diagnosticians.

References

- Bookbinder, G.E. (1976). *Salford sentence reading test: Manual for the Salford sentence reading test*. London, UK: Hodder and Stoughton.
- Buros Center for Testing (1959). *Fifth mental measurements yearbook*. Lincoln, NE: The Author.
- Carrow-Woolfolk, E. (1995). *Oral and written language scales: Listening comprehension and oral expression*. Circle Pines, MN: American Guidance Service.
- Chia, N.K.H. (1996). Hyperlexia: A deficit of inter-textuality in reading comprehension. *Education Today*, 46(2), 66-71.
- Chia, N.K.N., & Kee, N.K.N. (2013). Effectiveness of scaffolding interrogatives method: Teaching reading comprehension to young children with hyperlexia. *Journal of the International Association of Special Education*, 14(1), 67-78.
- Chia, N.K.H., & Poh, P.T.C., & Ng, A.G.T. (2009). Identifying and differentiating children with hyperlexia and its subtypes: A meta-analysis of results from WISC-III subtests and standardized reading tests. *Journal of the American Academy of Special Education Professionals*, Spring (2), 71-99.
- Clarke, A. (1975). *A dictation spelling test (mimeo)*. London, UK: Child Guidance Training Centre.
- Healy, J.M. (1982). The enigma of hyperlexia. *Reading Research Quarterly*, 17, 319-338.
- Healy, J.M., Aram, D.M., Horwitz, S.J., & Kessler, J.W. (1982). A study of hyperlexia. *Brain and Language*, 17, 1-23.
- Healy, J.M., Aram, D.M., Horwitz, S.J., & Kessler, J.W. (1982). A study of hyperlexia. *Brain and Language*, 17, 1-23.
- Joshi, R.M., Padakannaya, P., & Nishanimath, S. (2010). Dyslexia and hyperlexia in bilinguals. *Dyslexia*, 16, 99-118.
- Kennedy, B. (2003). Hyperlexia profiles. *Brain and Language*, 84, 204-221.
- Kutscher, M.L. (2005). *Kids in the syndrome mix of ADHD, LD, Asperger's, Tourette's, bipolar, and more: The one stop guide for parents, teachers, and other professionals*. London: Jessica Kingsley.
- Moseley, D. (1979). *Patterns of spelling errors: Some problems of test design*. Paper presented at the Conference on Reading and Spelling, Nene College.

- Neale, M.D. (1999). *Neale analysis of reading ability (3rd ed.)*. Berkshire, U.K.: NFER-Nelson.
- Newton, M.J., & Thomson, M.E. (1978). *The Aston Index: A classroom test for screening and diagnosis of language difficulties (Revised)*. Wisbech, Cambs: Learning Development Aids.
- Richman, L.C. & Wood, K.M. (2002). Learning disability subtypes: Classification of high functioning hyperlexia. *Brain and Language*, 82, 10-21.
- Schonell, F.J. (1932). *Essentials in teaching and testing spelling*. London, UK: Macmillan.
- Schonell, F.J., & Schonell, F.E. (1950). *Schonell graded reading tests*. London, UK: Oliver and Boyd.
- Silberberg, N., & Silberberg, M. (1967). Hyperlexia: specific word recognition skills in young children. *Exceptional Children*, 34, 41-42.
- Silberberg, N., & Silberberg, M. (1968). Case histories in hyperlexia. *Journal of School Psychology*, 7, 3-7. Retrieved from <http://www.eric.ed.gov/PDFS/ED024551.pdf>
- Stewart, G.A. (2007). *Helping a child with nonverbal learning disorder or Asperger's disorder (2nd ed)*. Oakland, CA: New Harbinger Publications.
- Tyre, C., & Young, P. (1994). *Specific learning difficulties*. Staffordshire, UK: QED.
- Watts, A.F. (1948). *The Holborn reading scale*. London, UK: George G. Harrap and Company.
- Wechsler, D. (1991). *Wechsler intelligence scale for children (Third Edition): WISC-III manual*. NY: Harcourt Brace Jovanovitch/Psychological Corporation.
- Warncke, E.W., & Shipman, D.A. (1984). *Group assessment in reading: Classroom teacher's handbook*. Englewood Cliffs, NJ: Prentice-Hall.

About the author

Arnold Chee Keong CHUA, MEd (Special Education) candidature, BSc, is an early interventionist who is currently working with Kits4Kids Special School, Singapore.

Narrative Storytelling to facilitate Early Literacy Skills of Preschoolers from Low Socio-Economic Status

Saranya ELANGOVAN MEd(SpEd), BBA
Special Education School, Singapore

Abstract

This eight-month study using the single-group pre-test/post-test research investigated the effectiveness of reading aloud as a strategy to improve word recognition of eighteen preschoolers from low-economic background and non-English speaking homes studying at PAP Community Foundation (PCF), Jurong West Pioneer Kindergarten. These reading disadvantaged children selected based on their socio-economic background and the frequency at which their mothers read to them, heard volunteers read storybooks aloud in small groups. It was hypothesized that enjoyable read aloud by volunteers would instil a positive experience that the children might have minimally experienced due to their home background, which in turn would enhance their word recognition skills.

Key words: Preschool readers, Reading aloud, Reading disadvantage, Word recognition

Introduction

What is Early Literacy Skills?

Dickinson (2001) and thereafter, Storch and Whitehurst (2002) attested that early literacy skills comprise multifaceted interrelationships between code-related and oral language skills. Code-related aptitude encompasses knowledge of conventions of print (e.g., knowing that writing goes from left to right), beginning forms of writing (e.g., writing one's name), letters and letter sounds, and phonological awareness (e.g., that the word rat begins with the /r/ sound) as explained by Storch and Whitehurst (2002). Oral language competencies include word knowledge, expressive and receptive vocabulary, knowledge of syntax, and conceptual knowledge (Vellutino, Scanlon, & Spearing, 1995; Vellutino, Scanlon, & Tanzman, 1991). Several studies (e.g., Dickinson & Tabors, 2001; Strickland, 2001; Wells, 1986) have reported that majority of the children attain language and pre-literacy skills through communications with peers and adults who use language in a manner that conform to their respective culture and corresponding printed word.

Disappointingly, most of the children raised in disadvantageous circumstances have inadequate opportunities to develop language and literacy skills in similar ways (Snow, Burns, & Griffin, 1998; Wells, 1986).

Literature Review

Background

Reading is a fundamental and central element to learning and development. As such, it should be inculcated amongst all learners, especially in the early and formative stage of the educational journey (Sainsbury & Schagen, 2004). Preschool years constitute the focal moment in a child's acquisition of reading journey. Children who lag behind in attaining the essential reading skills during these crucial years will inevitably straggle and be unable to draw level with their peers in later life (Ehri, Dreyer, Flugman, & Gross, 2007).

Reading facilitates both brain and physical development (The American Academy of Pediatrics, 2007). According to the Academy, by turning the pages of a book, a child is using muscles, which are essential for developing the fine motor skills. Moreover, readers who read for leisure attain the intrinsic motivation to read widely which in turn has positive educational outcomes (Sainsbury & Schagen, 2004).

The American Academy of Pediatrics (2007) postulates that reading aloud is a long standing tradition between parents and children taking place in their formative years which has an enduring impact on the child's developmental advancement, learning experiences and social communication abilities. According to a 1997 University of Chicago study, an infant's brain architecture is not genetically established. Rather, positive early reading experiences undoubtedly influence the design of a child's brain. Brain cells in very young children respond almost instantly to an adult's voice during read loud. Activated by this experience, new brain cells form and generate a progressively complex lifelong structure. This entire process fortifies the prevailing connections (Keller & Just, 2009).

When to Introduce Reading?

Educators deemed that children should not be taught to read until they were six and a half years old and scored well on reading readiness tests during the 1930s and 1940s (Morphett & Washburne, 1931). The researchers' premise was based on the notion that majority of the children who received formal reading instruction from six onwards typically succeeded in learning to read.

Subsequent researchers focused beyond chronological age and studied literacy experiences children gained during their early years (Wells, 1986). Several studies (e.g., Durkin, 1966; Ferreiro & Teberosky, 1982; Morrow, 1995) found that children from diverse socioeconomic backgrounds learn to read early. Durkin (1966) termed those children who were able to read before school entrance as "paper and pencil" kids. These children had the opportunity to listen to someone read to them and answer their questions.

Other investigators took a developmental perspective of reading. Clay (1996) put forth the notion of emergent literacy which follows a continuum. According to him, reading progresses in tandem with writing at a very early age. Children learn to read through active participation and they construct their own comprehension during the process. Adults assist children in this journey through modeling and demonstrations of reading and writing steps. Over and above this, the interactions and conversations that occur around print forms the predominant factor that eases the learning for the children.

Snow (1996) conceded that the real connection to literacy for the children happens when there is verbal interaction between the adult and child during reading. As mooted by Vygotsky (1962) and Lindfors (1987), children learn language by socially constructing meaning as they read the print. This involves explaining, scaffolding, expounding between the adult and child reading the story. Hence, successful reading that promotes literacy skills necessitates interaction and constructing of meaning (Fox 1993; Ninio 1980; Teale and Sulzby 1992).

Development of Early Literacy Skills

During the early literacy phase, the child is introduced to word recognition or decoding. Ehri (1991, 1994) proposed that children develop through four phases of word learning from pre-alphabetic, partial alphabetic, full alphabetic and consolidated alphabetic. Chia (1996a) provided an insight that some children face great challenges in decoding new words due to over dependence on phonetic-cue reading. According to Chia (2009), there are four phases of word recognition which could comprise visual-sequential or auditory-sequential process. Awareness of the development of early literacy skills is essential so that appropriate early intervention may be provided to the children as they start their formal learning journey.

Knowledge, concepts and proficiencies that are nurtured in early childhood are effective predictors of children's success in reading in future (Adams, 1990; Dickinson & Tabors, 2001; Whitehurst & Lonigan, 1998). Many researchers (e.g., Juel, 1988; Stanovich, 1986; Torgesen & Burgess, 1998) reported convincing evidence that children who are not nurtured and encouraged in acquiring reading skills generally remain weak in their reading abilities throughout schooling and post school. In fact, Stanovich (1986) termed this phenomenon as Matthew Effect, where the better readers progress and develop positively in their reading skills and the poor readers continuously lag behind and struggle. Hence, it is pertinent that intervention and support are provided in early childhood period to forestall the development of reading difficulties and advance preliteracy skills.

Importance of Reading Aloud

Listening to reading from a very young age is the key to language development from oral to written language, comprehension of the individual components of language and evolving an understanding that letters make sounds (Roberston, 2011). Hence, listening to reading aloud builds the essential language skills for future attainment in learning to read (Russ et al., 2007).

The sense of enjoyment can be seen in even very young children when they listen to their parents' reading. The children are likely to request for parents to read repeatedly given the positive attention that they receive in the process. The recurrence of reading is pleasurable to the child. This repetition is fundamental for the emerging of language skills and cognitive development. Hart and Risley (1995) presented that parents play a pivotal role in enhancing the vocabulary bank of infants less than 1 year old. Picture books and simple language have a great impact on harnessing the child's repertoire of vocabulary due to the conversations that occur around books and stories. This leads to superior range of vocabulary at age three. In fact, language exposure and positive interactions that transacts between a parent and child initiates pre-literacy and reading skills (Hart & Risley, 1995).

Since communications between the parent and the child takes place as a live face-to-face conversation, words listened on radio and television do not influence the brain activity or learning process as much. Children from advantaged home backgrounds have copious opportunities to listen, read and experience varied range of vocabulary before entry to schools. However, majority of children from low-socio economic background do not get this enriching experience, leading to educational risk (De Temple & Snow, 2003; Hart & Risley, 1995).

Reading aloud provides the richest nurturing of language development when compared to all other parent-child activities. Advances in neuroscience have clearly documented the correlation between early language exposure and enjoyment to development and enhancement of neural connections. Reading aloud propels the future success in learning language and reading (NICHD, 2005). This is because reading aloud instils motivation (Lonigan, 1994), activates cognitive skills (De Temple & Snow, 2003) and encourages imitation skills (the child reads like the parent). Besides, priming the background knowledge for a given reading text activates thinking process, and infuses prior knowledge and memory (Elangovan, 2012; Elangovan & Chia, 2013).

Parental Involvement in Reading

Russ et al. (2007) conveyed that parents play a pivotal role in facilitating their children to attain language skills and harness the motivation to learn through reading to the latter regularly. Children from low-income homes are less likely to be read to everyday compared to those from higher income and non-minority counterparts. Russ et al. (2007) further recorded in their investigation that majority of the children from low-income families do not have the opportunity to listen or learn vocabulary words. Their restricted repertoire of vocabulary words manifest in language delay and educational risk at school entry. Additionally, Neuman and Celano (2001) and thereafter, Krashen (2004) conveyed and confirmed with previous investigations that children from low economic backgrounds have minimal access to reading materials.

The 2005 Nation's Report Card on Reading accounted that children from disadvantaged families demonstrated lower reading scores in grades 4 and 8 compared to their peers from middle class backgrounds (Perie, Grigg & Donahue, 2005). As such, children from low-income families are at utmost risk for literacy difficulties and failure. Snow, Burns, and Griffin (1998) reckoned that most reading challenges could be addressed by promoting language and literacy development. Children can acquire the necessary language and literacy skills to be able to read if they are read to frequently (Bus, Van Ijzendoorn, & Pellegrini, 1995; Snow, Burns, & Griffin, 1998).

Pre-School Children

For more than a decade, heightened attention has been diverted to preschool years as an indispensable time for developing key skills that are important to succeed in school. The key enabler to young children's successful transition to school and ability to read depends on the expansion of their language and pre-literacy skills (Dickinson & Tabors, 2001; Whitehurst & Lonigan, 2001).

Whitehurst and Lonigan (1998) noted that children who progress to first grade with a foundation in early literacy skills and motivation to learn are ready to partake in complex task of learning to read as compared to those without these fundamental skills.

One of the ways to enhance early literacy skills, which are primarily word recognition skills, is through read aloud. Bus (2001) deemed that adults reading to children under different environments might deliver positive social-emotional advantages to the latter. Besides, several researchers surmised the positive impacts of adult reading on children's language and literacy development (e.g., Lonigan, 1994; NRC, 1998; Wasik & Hendrickson, 2004). Adult reading instills in children the motivation to read as well (Gambrell & Marinak, 2009).

However, not all children have the opportunity to listen to adults, especially their mothers read to them. Children who are from low socio-economic status are especially at risk of being deprived of such nurturing reading experiences (Hart & Risley, 1995; McCoach, O'Connell, Reiss, & Levitt, 2006).

Resolution

Researchers (Russ et al., 2007) conceded that reading aloud positively promotes and expands the repertoire of vocabulary in a young child. Hence, they recommended the promotion of reading aloud to children from low-economic status in order to lay a robust foundation for future academic success. Reading of books and introducing language related activities are especially crucial for children from low socio-economic status as these children face a high risk of reading difficulties. Stories that nurture these children are complementary to those experienced by children from advantaged backgrounds (De Temple & Snow, 2003). One way to bring these powerful language experiences is through reading of books to children from disadvantaged backgrounds either in the preschools or through external volunteers. This would provide the children the experience and joys that are akin to listening to their mothers read to them.

The Study

Aim

The main purpose of this study was to ascertain the effects of Reading Rocks programme on the early literacy skills of children from low socio-economic status, regardless of ethnic background, from PAP Community Foundation (PCF), Jurong West Pioneer Kindergarten. The study further sought to determine if specifically, reading aloud to the group of preschoolers who have limited opportunity to listen to their parents read to them given their home background would be an effective strategy to improve their word recognition.

Research Design

The study was conducted using quasi-experimental single-group pre-test/post-test research design to investigate the effectiveness of reading aloud as a strategy to improve word recognition of the study subjects, observed at two time points, one before the treatment and one after treatment. One standardized test was administered as pre- and post-test. Changes in word recognition results measured by the standardized tests are assumed to be the result of the treatment. No control or comparison group was employed. Taking into consideration the

time constraints, the researcher deemed that as an exploratory study it was a cost-effective way to discern if a potential treatment was worthy of further investigation in the future.

Single-group pre-test/post-test design meant that subjects of the study group were compared with themselves instead of to a control or nonequivalent comparison group. Data on the variable of interest (i.e., word recognition) were collected from the standardized test administered on the study group prior to the treatment, and after the treatment. The difference in test results is interpreted as the change resulting from the treatment (i.e. read aloud). This is a reasonable way to achieve the goal of an experiment in the sense that all possible time-invariant factors associated with the study subjects are controlled. However, this design does not control for time-varying factors that may be coincidental with the study period (Kerlinger & Lee, 2000).

Participating Subjects

Chosen subjects were from disadvantaged socio-economic circumstances, regardless of their ethnic background, with minimal reading experiences, interactions and opportunities with their mothers. The PCF personnel selected the subjects and submitted the list to the Reading Rocks programme coordinator.

Instrumentation

The researcher administered one standardized test as pre-/post-tests before and after treatment. It is the Carver Word Recognition Test (Carver, 1970) word recognition test. Carver (1970) has identified 10 word recognition stages. Each of the stages is briefly described below:

Word Recognition Stage 1 (below 4 years of age):

Virtually, there is no word recognition knowledge.

Word Recognition Stage 2 (below 4 years of age):

Knowledge of word recognition is rudimentary. The child may possess a few initial letters, especially some initial short vowels, and perhaps *r*, *m*, *w*, *r*, *f* and *t*.

Word Recognition Stage 3 (between 4½ and 5 years of age):

It cannot be assumed that the child at this word recognition stage has acquired an insight into serial aspects of letters in words or aural discrimination of letter sounds. However, the child has known some initial letters/sounds, but not all. He may be at the stage of hearing initial letter in words such as *camel* but not in *climb*.

Word Recognition Stage 4 (between 5 and 5½ years of age):

The child has probably known somewhat more than half initial letters. He can also relate a few simple consonants at the end of words, know easier short vowels (*o*, *a*) in words, but may still be weak in the serial aspect of letters in words.

Word Recognition Stage 5 (between 5½ and 6 years of age):

The child can identify most of the initial letters. There is also an accelerated increase in knowledge of word endings. The child is still likely to be confused over nuances between short vowel sounds (e.g., *e*, *i*, *u*).

Word Recognition Stage 6 (between 6 and 6½ years of age):

The child has practically heard all initial letter sounds and could visually identify them, though he may still have difficulty with initial letter sounds such as *q*, *v*, *h*, *p*, *b*. The child can more or less be able to identify short vowel sounds and associate the visual letters. He may still have a few confusions regarding initial positions of letters (serial aspect).

Word Recognition Stage 7 (between 6½ and 7 years of age):

The child begins to discriminate aurally initial multiple consonants (e.g., *cl*, *gr*, *fl*) and probably recognizes simpler ones (e.g., *pl*, *fr*) in words. He could still be confusing *b* and *d*. However, the child has acquired a strong knowledge of the initial sound, its equivalent letter symbol and its serial position at the left of a word. He could still have a specific vowel discrimination difficulty, especially with short *i* and *e*, and possibly *u*; most single letter endings identified.

Word Recognition Stage 8 (between 7 and 7½ years of age):

The child develops a growing command of initial multiple consonants (especially, *bl*, *pr*, *fr*, *br*) and may still have difficulty in hearing letter sounds, as revealed by difficulty in discriminating aurally between, for example, *cl*, *gl*, *cr*, *gr*,

Word Recognition Stage 9 (between 7½ and 8 years of age):

The child displays more sophisticated word recognition skills. For example, he can say words of combined vowel sounds (e.g., *or*, *aw*) and generally knows and hears initial consonants *ch* and *th*, though he may have difficulty in discriminating between *ch* and *th*. The child has also established initial multiple consonants, including *sw*, *ch*, *gl*, *cr*, *th*, *dr*, *gr*, and developed an ability to discriminate initial letter *s* together with a second consonant, but may be limited to *sc* and *sw*.

Word Recognition Stage 10 (above 8 years of age):

The child possesses a thorough knowledge of the double initial consonants: probably all simple single letter endings (e.g., *-ing*), begins to recognize and say consonant blends (e.g., *st*, *sl*, *sn*, *sm* and *sp*) as well as insight into *th*, *tw* (initially), manipulates letter groups (e.g., *ar*, *ow*, *oy*), and begins to recognize difficult letter groups (e.g., *ir*, *er*, *ur*). The child has yet to master complex initial letter groups (e.g., *spr*, *str*, *thr*) and difficult endings (e.g., *ch*, *sh*).

The researcher administered the pre-test and eight months later, the post-test as a group. The researcher tested the subject son the complete 50 test items on the Carver (1970) test of word recognition. The researcher read each of the fifty words as discrete words and in a sentence. The subjects were required to select from a printed line of 5 or 6 single words the word that matches the word spoken by the researcher. The test looks at how well children can determine which printed word (amongst a list of words and non-words) matches a word spoken by the researcher. This test assesses children's implicit knowledge of the sounds within words and knowledge of the correspondence between printed symbols and sounds.

Setting/Schedule

The researcher conducted the study at PCF (Jurong West, Pioneer) Kindergarten over a period of eight months from August 2012 to April 2013.

Treatment

The volunteer readers attended a session on simple read aloud strategies before they embarked on the programme. The National Library Board of Singapore provided the storybooks for the reading aloud sessions.

Through twice-weekly 30 minutes read-aloud sessions, the readers conducted enjoyable and facilitative read aloud sessions to the selected subjects with the presupposition to enhance early literacy and word recognition skills. Besides listening to the reading aloud, the children learnt that the pages of a book are turned from right to left and the text is read left to right. In order to promote the love of reading and cultivate good reading habits among the children, each session was kept to a small group size of not more than five children, with one reader managing and facilitating the session.

The readers supplemented their readings with songs and games in order to engage and garner the interest of the children in language. Moreover, the children had opportunities to decide and select the storybooks that they want the readers to read to them. The readers read to each group of children twice weekly. The children attended either the morning or afternoon sessions depending on their PCF class schedule.

Results and Discussion

As stated earlier, aim of this study was to ascertain the effects read aloud to a group of preschoolers who have limited opportunity to listen to their parents read to them given their home background would be an effective strategy to improve their word recognition skills.

Reading Rocks programme was not designed to teach children how to read but rather provide an avenue to enhance their pre-literacy skills. Primarily, the programme's goal was to mimic the support and joy that parents who read with their children would bring about.

It set out to achieve the goal by providing opportunities to expose selected preschoolers from non-English speaking homes and homes where there is little reading aloud to English language books and to spoken English and to help them build simple vocabulary and start to have an understanding of English but without any set books or worksheets, etc.

Pre-Test Results

Appendix 1 shows the pre-test results of the 18 subjects. The possible range of scores in the Carver test is from 0 to 10. Twelve subjects recorded a score of stage 1 (S1/F, S2/M, S3/F, S4/F, S5/M, S6/M, S7/F, S10/F, S11/MF, S12/F, S13/F and S14/F). Their word recognition age was below 4 years of age and hence, they had virtually no word recognition knowledge (Carver, 1970). The rest of the subjects (S8/F, S9/M, S15/M, S16/F, S17/M and S18/M) were at stage 2 with corresponding approximate level of word recognition ability at below 4 ½ years. All eighteen subjects' word recognition ages as per Carver (1970) were below their chronological ages.

During the pre-test session, the researcher observed that the subjects were reserved and quite. Some subjects did not reciprocate the researcher's greetings to them. All eighteen subjects, except one were compliant and completed all test items. One subject refused to continue

after attempting 3 test items, exhibited test anxiety and left the testing room. Three subjects circled every word in the row. Two subjects circled the first word in every row. Three subjects appeared anxious and not confident of their answers. They erased their initial answers on several occasions and circled another word in the row. One subject constantly looked at the researcher to sought affirmation that he was correct. The researcher conducted the test in the room where the reading aloud sessions takes place. The allocated room was away from the classrooms.

Post-Test Results

Appendix 2 shows the post-test results of the 5 subjects who continued with the Reading Rocks! Reading programme. One subject (S14/F) attained stage 1 level again and showed no improvement in the word recognition knowledge. However, the subject showed remarkable confidence and repeated some words before circling the answer. She did not seek affirmation from the researcher as during the pre-test. The other four subjects (S3/F, S4/F, S10/F and S13/F) showed significant improvement and moved from stage 1 to stage 2 in their word recognition knowledge (Carver, 1970).

During the post-test session, the researcher observed a total shift in the attitude of the subjects. All 5 subjects greeted spontaneously and interacted with the researcher before the commencement of the post-test. Besides, they were cheerful and chatted amongst themselves. Though the allocated test room was within an ongoing classroom with noise and distractions from other children, the subjects remained engaged and focused. There was hence a complete shift in attitude and participation when compared to their pre-test behavior.

Reading exposes children to varied skills such as language and general knowledge development, listening, critical thinking, cognitive, imagination, communication and social development. The researcher observed social development in the remaining 5 students during the post-test. This is in tandem with research that reading enhances children's social skills and community participation (Guthrie, Schafer, & Hutchison, 1991).

Migration to FLAiRS Programme

After the pre-test, students from the Reading Rocks programme were transferred to FLAiRS programme. The main reason for the "migration" was that there was a clarification of the processes and purpose of the Reading Rocks programme with the PCF Kindergarten. The initial aim of the PCF Kindergarten was that the readers would conduct read aloud sessions with many different groups of children.

The programme coordinator of Reading Rocks programme clarified that the intention was to read with the same groups of children over a period of time with some frequency. This would facilitate gathering of pre-test and post-test results by the researcher. Both parties conceded that the Reading Rocks programme should anchor the Kindergarten 1 and Nursery cohort. The rest of the children (i.e. 13 children) who were part of the Reading Rocks programme transited to FLAiRS programme.

The purpose of the FLAiRS programme is to enable students who are "behind" and lagging in her language skills to receive remediation with their English language learning prior to entry to Primary 1. Trained educators teach these students on how to read and write on a one-on-

one or several-on-one basis. They use specially developed materials for the programme. The teacher comes daily.

Recommendations for Future Studies

The sample that tested in this study is not representative of the entire group of children from similar socio-economic status schooling in the different PCF branches. As such, there is a need to generalize and infer about the whole population of children with similar background with caution. This is especially so given the small sample size, especially after the migration to the FLAiRS Programme. Although the researcher acknowledged positive outcomes in the remaining children in the Reading Rocks Programme, a larger sample size is required to ascertain the external validity of the current findings.

Conclusion

The primary research aim of this study was to ascertain the effects of Reading Rocks programme focusing on reading aloud to a group of preschoolers who have limited opportunity to listen to their parents read to them given their home background, would be an effective strategy to improve their word recognition. Though majority of the students had transited to the FLAiRs Programme, the Reading Rocks programme recorded positive outcomes on the remaining students as discussed earlier. This study would certainly add to the copious research on the area of reading aloud to children in preschools.

After the post-test session, the readers have incorporated supplementary reading activities as use of flash cards to provide more opportunities for the development of word recognition skills. Torgesen (1998) stated that studies on reading generated compelling outcomes of children who got off to a poor start in reading rarely caught up; poor readers almost invariably remain to be so, thus, the importance of intervening when they are young.

References

- Adams, M.J. (1990). *Beginning to read: Thinking and learning about print*. Cambridge: MIT Press.
- American Academy of Paediatrics (2007). *Reading is essential to success in our society* (preventing reading difficulties in young children). Retrieved from: <http://www.educationalgateway.com/reading-to-children/index.html>
- Bus, A.G. (2001). Joint caregiver-child storybook reading: A route to literacy development. In S.B. Neuman & D.K. Dickinson (Eds.), *Handbook of early literacy research* (pp. 179-191). New York, NY: Guilford Press.
- Bus, A.G, Van Ijzendoorn, M.H., & Pellegrini, A.D. (1995). Joint book reading makes for success in learning to read: A meta-analysis on intergenerational transmission of literacy. *Review of Educational Research* 65(5), 1-21.
- Carver, C. (1970). *Word recognition test*. Sevenoaks: Hodder and Stoughton.

- Chia, N.K.H. (1996). *Teaching spelling to primary three Singaporean Chinese children who are poor spellers of English words*. Unpublished Master of Education thesis. Edith Cowan University, Perth, Western Australia.
- Chia, N.K.H. (2009). Improving word recognition of K-2 Chinese children with low oracy/literacy in English language through concrete poetry teaching. *Journal of Reading and Literacy*, 1, 5-34
- Clay, M. (1966). *Emergent reading behavior* (Unpublished doctoral dissertation). University of Auckland, New Zealand.
- De Temple, J., & Snow, C.E. (2003). Learning words from books. In A. van Kleeck, S.A. Stahl, & E.B. Bauer (Eds.), *On reading books to children: Teachers and parents* (pp. 16-36). Mahwah, NJ: Erlbaum.
- Dickinson, D.K. (2001). Book reading in preschool classrooms: Is recommended practice common? In D.K. Dickinson & P.O. Tabors (Eds.), *Beginning literacy with language: Young children learning at home and school* (pp. 175-204). Baltimore, MA: Brookes.
- Dickinson, D.K., & Tabors, P.O. (Eds.). (2001). *Beginning literacy with language: Young children learning at home and school*. Baltimore, MA: Brookes.
- Durkin, D. (1966). *Children who read early: Two longitudinal studies*. New York, NY: Teachers College Press.
- Ehri, L.C. (1991). Development of the ability to read words. In R. Barr, M. Kamil, P. Mosenthal, and P.D. Pearson (Eds.), *Handbook of reading research. Volume II* (pp.383-417). New York, NY: Longman.
- Ehri, L.C. (1994). Development of ability to read words: Update. In R. Ruddell, M. Ruddell, and H. Singer (Eds.), *Theoretical models and processes of reading (4th edition)* (pp.323-358). Newark, DE: International Reading Association.
- Ehri, L.C., Dreyer, L.G., Flugman, B., & Gross, A. (2007). Reading rescue: An effective tutoring interaction model for language-minority students who are struggling readers in first grade. *American Educational Research Journal*, 44(2), 414-448.
- Elangovan, S. (2012). Cognitive equation of reading process for children with autism. *Journal of Reading and Literacy*, 4, 48-78.
- Elangovan, S., & Chia, N.K.H. (2013). An inter-correlational study of the reading components in profiling and generating a cognitive equation for the reading performance of students with autism. *International Journal of Special Education*, 28(2), 14-23.
- Ferreiro, E., & Teberosky, A. (1982). *Literacy before schooling*. Exeter, NH: Heinemann.
- Fox, C. (1993). *At the very edge of the forest: The influence on storytelling by children*. New York, NY: Cassell.

- Gambrell, L., & Marinak, B. (2009). *Reading motivation: What the research says*. Retrieved from <http://www.readingrockets.org/article/29624>.
- Guthrie, J.T., Schafer, W.D., & Hutchinson, S.R. (1991). Relation document literacy and prose literacy to occupational and societal characteristics of young black and white adults. *Reading Research Quarterly*, 26, 30-48.
- Hart, B., & Risley, T.R. (1995). *Meaningful differences in the everyday experience of young American children*. Baltimore, MA: Paul H. Brookes Publishing Co.
- Juel, C. (1988). Learning to read and write: A longitudinal study of 54 children from first through fourth grades. *Journal of Educational Psychology*, 80, 437-447.
- Karweit, N., & Wasik, B.A. (1996). The effects of story reading programs on literacy and language development of disadvantaged preschoolers. *Journal of Education for Students Placed at Risk*, 1(4), 319-348.
- Keller, T., & Just, M. (2009). Altering cortical connectivity: Remediation-induced changes in the white matter of poor readers. *Neuron*, 64(5), 624-631.
- Kerlinger, F.N., & Lee, H.B. (2000). *Foundations of behavioral research (4th edition)*. New York, NY: Harcourt College Publishers.
- Krashen, S. (2004). *The Power of reading (2nd ed.)*. Portsmouth, NH: Heinemann.
- Lindfors, J.W. (1987). *Children's language and learning (2nd ed.)*. Englewood Cliffs, N.J.: Prentice Hall.
- Lonigan, C. (1994). Reading to preschoolers exposed: Is the emperor really naked? *Developmental Review*, 14, 303-323.
- McCoach, D.B., O'Connell, A.A., Reis, S.M., & Levitt, H. (2006). Growing readers: A hierarchical linear model of children's reading growth over the first two years of school. *Journal of Educational Psychology*, 98, 14-28.
- Morphett, M.V., & Washburne, C. (1931). When should children begin to read? *Elementary School Journal*, 31, 496-508.
- Morrow, L.M. (ed.) (1995). *Family literacy: Connections in Schools and communities*. Newark, DE: International Reading Association.
- National Institute of Child Health and Human Development Early Child Care Research Network (NICHD). (2005). Pathways to reading: The role of oral language in the transition to reading. *Developmental Psychology*, 41, 428-442.
- National Research Council (1998). Preventing reading difficulties in young children. Washington, DC: National Academy Press.

- Neuman, S. B., & Celano, D. (2001). *Access to print in low-income and middle-income communities: An ecological study of four neighborhoods*. *Reading Research Quarterly*, 36, 8-26.
- Ninio, A. (1980). Picture-book reading in mother-infant dyads belonging to two subgroups in Israel. *Child Development*, 5, 587-90.
- Perie, M., Grigg, W., & Donahue, P. (2005). *The nation's report card: Reading 2005* (NCES 2006-451). Washington, DC: U.S. Department of Education, National Center for Education Statistics. Retrieved from: <http://nces.ed.gov/nationsreportcard/pdf/main2005/2006451.pdf>
- Robertson, S. (2011). *Meeting the literacy challenge*. Retrieved from: www.ohioslha.org/pdf/convention/.../preconv4robertsonc.pdf.
- Russ, S., Perez, V., Garro, N., Klass, P., Kuo, A., Gershun, M., Halfon, N., & Zucherman, B. (2007). *Reading across the nation: A chartbook*. Retrieved from: <http://www.reachoutandread.org/parents/readingaloud/readingaloud.aspx>.
- Sainsbury, M., & Schagen, I. (2004). Attitudes to reading at ages nine and eleven. *Journal of Research in Reading*, 27(10), 373-386.
- Snow, C. (1996). Quoted in Kate Zernike, Declining art of table talk a key to child's literacy. *The Boston Globe*, 1, 30.
- Snow, C.E., Burns, S., & Griffin, P. (Eds.). (1998). *Preventing reading difficulties in young children*. Washington, DC: National Academy Press.
- Stanovich, K.E. (1986). Matthew effects in reading: Some consequences of individual differences in the acquisition of literacy. *Reading Research Quarterly*, 21, 360-406.
- Storch, S.A., & Whitehurst, G.J. (2002). Oral language and code-related precursors to reading: Evidence from a longitudinal structural model. *Developmental Psychology*, 38, 934-947.
- Strickland, D.S. (2001). Early intervention for African-American children considered to be at-risk. In S. B. Neuman & D.K. Dickinson (Eds.), *Handbook of early literacy research* (pp. 322-332). New York, NY: Guilford Press.
- Teale, W.H., & Sulzby, E. (1992). Literacy acquisition in early childhood: The roles of access and mediation in storybook reading. In D.A. Wagner (Ed.), *The future of literacy in a changing world* (pp.101-112). New York, NY: Pergamon.
- Torgesen, J.K. (1998 February) *Individual differences in response to reading intervention*. Paper presented at the Pacific Coast Research Conference, LaJolla, California, USA.
- Torgesen, J.K., & Burgess, S.R. (1998). Consistency of reading-related phonological processes throughout early childhood: Evidence from longitudinal-correlational and instructional studies. In J. Metsala & L. Ehri (Eds.), *Word recognition in beginning reading* (201-215). Hillsdale, NJ: Erlbaum.

- Vellutino, F.R., Scanlon, D.M., & Spearing, D. (1995). Semantic and phonological coding in poor and normal readers. *Journal of Experimental Child Psychology*, 85, 83-103.
- Vellutino, F.R., Scanlon, D.M., & Tanzman, M.S. (1991). Bridging the gap between cognitive and neuropsychological conceptualizations of reading disability. *Learning and Individual Differences*, 3, 181-203.
- Wasik, B.H., & Hendrickson, J.S. (2004). Family literacy practices. In C.A. Stone, E.R. Silliman, B.J. Ehren, & K. Apel (Eds.), *Handbook of language and literacy development and disorders* (pp.154-174). New York, NY: Guilford.
- Wells, G. (1986). *The meaning makers: Children learning language and using language to learn*. Portsmouth, NH: Heinemann.
- Whitehurst, G.J., & Lonigan, C.J. (1998). Child development and emergent literacy. *Child Development*, 69, 848-872.
- Whitehurst, G., & Lonigan, C. (2001). Emergent literacy: Development from pre-readers to readers. In S. B. Neuman & D. K. Dickinson (Eds.), *Handbook of early literacy research* (pp.11-29). New York, NY: Guilford Press.
- Vygotsky, L.S. (1962). *Thought and language*. Cambridge, MA: MIT Press.

About the author

Ms Saranya ELANGO VAN was awarded the Society for Reading & Literacy (SRL) Research Award 2012 at the SRL Conference: Literacy for a Changing World held at the National Library Board on 1 June 2012. She has taught students with mild intellectual disabilities and autism since 2003. She is currently teaching students with autism in a mainstream focused special school in Singapore.

APPENDIX 1:

Pre-Test Results: Carver's Word Recognition Test (Word Recognition Age/WRA)

Subjects	Chronological Ages	WTR Score	W.R. Age / Stage
S1/F	4 y 7 m	6	Below 4 years * / 1
S2/M	4 y 4 m	2	Below 4 years * / 1
S3/F	4 y 3 m	6	Below 4 years * / 1
S4/F	4 y 2 m	0	Below 4 years * / 1
S5/M	4 y 4 m	4	Below 4 years * / 1
S6/M	4 y 8 m	5	Below 4 years * / 1
S7/F	5y 3 m	4	Below 4 years * / 1
S8/F	5 y 4 m	10	4 yrs 0 mth / 2
S9/M	4 y 8 m	11	4 yrs 0 mth / 2
S10/F	3 yrs 11 mths	6	Below 4 years * / 1
S11/M	4 yrs 6 mths	8	Below 4 years * / 1
S12/F	3 yrs 7 mths	6	Below 4 years * / 1
S13/F	3 yrs 11 mths	3	Below 4 years * / 1
S14/F	4 yrs 1 mth	6	Below 4 years * / 1
S15/M	5 yrs 3 mths	12	4 yrs 0 mth / 2
S16/F	5 yrs 2 mths	10	4 yrs 0 mth / 2
S17/M	5 yrs	16	4 yrs 3 mths / 2
S18/M	5 yrs 6 mths	12	4 yrs 0 mth / 2

Key: S = Subject; M = Male; F = Female; WTR =; W.R.Age = Word Recognition Age; y = years; m = months

* Virtually no word recognition knowledge.

APPENDIX 2:

Post-Test Results: Carver's Word Recognition Test (Word Recognition Age/WRA)

Subject	Chronological Ages	WTR Score	W.R. Age / Stage
S1/F	5 y 2 m	6	dropped out of programme
S2/M	5 y	2	dropped out of programme
S3/F	4 y 11 m	11	4 yrs 0 mth / 2
S4/F	4 y 10 m	10	4 yrs 0 mth / 2
S5/M	5 y	4	dropped out of programme
S6/M	5 y 4 m	5	dropped out of programme
S7/F	5 y 11 m	4	dropped out of programme
S8/F	6 y	10	dropped out of programme
S9/M	5 y 4 m	11	dropped out of programme
S10/F	4 y 7 m	13	4 yrs 0 mth / 2
S11/M	5 y 2 m	8	dropped out of programme
S12/F	4 y 3 m	6	dropped out of programme
S13/F	4 y 7 m	13	4 yrs 0 mth / 2
S14/F	4 y 9 m	6	Below 4 years * / 1
S15/M	5 y 11 m	12	dropped out of programme
S16/F	5 y 10 m	10	dropped out of programme
S17/M	5 y 8 m	16	dropped out of programme
S18/M	6 y 2 m	12	dropped out of programme

Key: S = Subject; M = Male; F = Female; WTR =; W.R.Age = Word Recognition Age; y = years; m = months

* Virtually no word recognition knowledge.

A Brief Updated Examination on the Enigma of Hyperlexia

Patricia Mui Hoon NG, BA, Dip.PE
M.Ed (Special Education) Candidate
National Institute of Education
Nanyang Technological University, Singapore

Abstract

This short paper attempts to provide an updated brief examination of hyperlexia covering on its changing definition, prevalence, signs and symptoms as well as the currently available strategies to help children with hyperlexia. The author has also incorporated the Triple-D model of teaching and the CCAS framework to help paint a clearer picture for educators to navigate through the planning that will support the holistic development of the child with hyperlexia. Consequently, the educator can envision what can be done to help the child see the light at the end of the tunnel and the journey together with the child to see the light can be a fulfilling one.

Key words: CCAS framework, hyperlexia, Triple-D model of teaching

Introduction

According to the American Speech-Language-Hearing Association (ASHA), hyperlexia is a developmental disorder in which children exhibit precocious printed language decoding abilities with deficits in reading comprehension. It is categorized as autism spectrum disorder (ASD), but has a differential diagnosis as it has been reported among children with developmental disorder other than ASD (ASHA, 2006). Similarly, in the Educator's Diagnostic Manual of Disabilities and Disorders (EDM), a description of hyperlexia is provided for the Individualized Education Program (IEP) under the Individuals with Disabilities Education Act of 2004 (IDEA 2004) classification of autism at Level 1. Hyperlexia is the specific disorder identified at Level 2 (Pierangelo & Giuliani, 2007).

Generally, the term *hyperlexia* refers to developmental hyperlexia in children. Non-developmental hyperlexia on the other hand refers to an acquired rendition of hyperlexia such as in the case found by researchers of a 69-year-old woman who had suffered cerebral infarction and in other cases of people suffering from brain dysfunction or lesion (Suzuki, Itoh, Hayashi, Kouno, & Takeda, 2009).

Prevalence of Hyperlexia

The incidence of developmental hyperlexia has been estimated to be between 5% and 20% (Grigorenko et al., 2002). For children with autism, the frequency of its co-occurrence is between 5% and 10% (Burd & Kerbeshian, 1985). In most learning disorders, there is a higher rate of incidence in boys as compared to girls for disorders related to the left or right

brain. However, there is no evidence of significant gender differences in the occurrence of hyperlexia (Grigorenko, et al., 2002).

According to medical research (Semrud-Clikeman & Hynd, 1990), the left hemisphere of the brain is more language based, while the right, more visual-spatial. There is more asymmetry between the two hemispheres of the male brain as the maturation rates are different from the female brain. This asymmetry usually explains why more boys are affected by learning disorders which however, is not the case for hyperlexia.

Symptoms of Hyperlexia

The comprehension impairment in hyperlexia inevitably contributes to neurobehavioral symptoms of social deficits. These deficits range from a severe lack of social involvement (autistic-like) to milder features of social aloofness, even though these children do have positive social-emotional attachment with significant others (Pennington, 1991), i.e. parents and other close relatives or friends. Often, loved ones may ignore and dismiss their social aloofness and inability to initiate conversations as shyness and find it to be of unnecessary concern. Their perspective may be to let their children pursue their own interests and preference since they appear to be more intelligent than other children in recognizing print. However, the inability to put themselves in the shoes of others due to their comprehension impairment may lead to these children being misunderstood as being insensitive, disrespectful or even cruel by their abnormal response to social situations.

Another symptom of hyperlexia is the compulsion to decode print stimuli without comprehension of its meaning (Whitehouse & Harris, 1984). Hence the precocious reading ability is even likened to barking at print and marked by echolalia. The intense and preoccupying interest in print stimuli replaces other developmentally appropriate activities for these children (Healy, 1982). This lack of exposure to other developmentally appropriate activities can compound their inability to comprehend social relationships which typically developing children have. Healy (1982) also reported that parents have sought specialist help before age 5 because they suspected cognitive impairments, language delay, and behavioural abnormalities in their children. Also, they were surprised that their children could read before being able to talk by pointing to words and objects to demonstrate understanding. In one case, the child would ignore the multitude of toys which surrounded him and lie down in his playpen to study his books instead. These parents are the ones who realize that ignorance is not bliss after all, if the child remains locked up in an isolated world of their own.

Children's talent in word recognition can be suggestive of an advanced development in a specific brain function generating the advantage in learning. However, hyperlexia is more often termed as an unusual ability in children with learning disorders, especially in language (Aaron, 1989). This unusual ability is sometimes termed as a splinter skill or savant idiosyncrasy (Treffert, 2011). In the article *Hyperlexia: Disability or superability?*, the researchers Grigorenko, Klin, and Volkmar (2003) examined the debate on whether hyperlexia is a distinct syndrome with comorbidities, given that it exists with a number of different disorders, or if it is a part of the spectrum of some other disorders. They concluded with a rejection of the latter definition, rendering hyperlexia the status of a distinct syndrome.

Literature on precocious ability in word recognition can be found as far back as 1919, in a work by Parker. It is called *Pseudo-talent for words*, likely due to the phenomenal word recognition talent with impaired comprehension occurring in developmentally disabled

populations. Other early researchers (Kanner, 1943; Phillips, 1930) also found it in their clinical populations of childhood schizophrenia and autistic disorders. Eventually, Silberberg and Silberberg (1967) called it hyperlexia to refer to an unusually well-developed ability to read single words in children with cognitive deficits and behavioural abnormalities.

However, a year after this term was coined, Niensted (1968) argued that typically developing children without cognitive impairments can also be hyperlexic, as in having a large discrepancy between the high-level of decoding and low-level of comprehending printed words. Subsequently, various other researchers also reported on such cases (e.g., Jackson, Donaldson, & Cleland, 1988; Pennington, Johnson, & Welsh, 1987; Richman & Kitchell, 1981). The talent can be so remarkable as in the case of a toddler (2-11 years) who could read almost seven years beyond his IQ or language age and was developmentally normal with no signs of autism or related disorders (Pennington, et al., 1987).

In the study by Niensted (1968) which found typically developing school children with hyperlexia, it was noted that the possibility of a physiological (familial) variant cannot be overruled. Two groups of such children from the regular school population were given remediation (less than 60 minutes a week and not longer than 8 months) with emphasis upon comprehension and phonics. The post-tests found that only one remained hyperlexic in one of the groups. Nevertheless, the remaining hyperlexic child had increased her comprehension by one year within three months of the intervention. These results suggest that hyperlexia can be overcome through educational therapy.

In order to distinguish hyperlexia from precocious reading skills in children without developmental delays, Healy (1982) argued that the diagnosis of hyperlexia should require a co-occurrence of interpersonal difficulties. The precocious ability in word recognition is nevertheless the significant descriptor which is defined as a spontaneous ability to read words before age 5. In her studies, Healy (1982) found that children with hyperlexia were unable to pass age-appropriate Piagetian tasks, both verbal and non-verbal. While they might comprehend literal units, their comprehension broke down when abstract or organizational strategies were required to gain meaning. The prognosis is that such a phenomenal word-calling ability may or may not continue to develop although word recognition skills remain well above our expectations based on other cognitive or linguistic abilities.

Various researchers (e.g., Huttenlocher & Huttenlocher, 1973; Mehegan, Fritz, & Dreifuss, 1972; Burd, Fisher, Knowlton, & Kerbeshian, 1987; Treffert, 2011) concur that the prognosis for hyperlexia is better than one without the phenomenal reading ability as reading is a tool for acquiring knowledge. For the children with atypical development, researchers (Huttenlocher & Huttenlocher, 1973; Mehegan, Fritz, & Dreifuss, 1972) have reported a better lifelong outcome for them as compared to those without hyperlexia. A few studies (Burd, Fisher, Knowlton, & Kerbeshian, 1987; Burd, Kerbeshian, & Fisher, 1985) even reported markedly increased IQs for their samples of children with pervasive developmental disorders (PDD) and hyperlexia. According to Treffert (2011), the neurotypical group with their advanced reading at a very early age inevitably draws attention. Eventually their classmates catch up in reading skills, but these children, usually very bright, go on to have very typical, successful lives. He also noted that the autistic-like abnormalities in hyperlexia can be remediated through occupational and behaviour therapy.

The work cut out for educators would then be in early intervention for the cognitive deficits observed in forming, linking, or comprehending the meaning of symbols, and/or failures of

differentiation. Being unable to distinguish symbols from the thing being symbolized, fantasy from reality, and self from other, exemplifies concrete thinking, which is an extraordinarily difficult condition to treat (Tuch, 2011). Therefore, parents who assume that their children's hyperlexia can be dismissed as a passing phase in childhood do not realize that they are far from being correct. Often, the assumption is that these children would eventually comprehend the meaning in the same way they easily figured out how to read the print.

Such an assumption ignores the basis that word recognition is a decoding process which those with hyperlexia are very good at, while comprehension is a much more complex process requiring organizational skills that are absent in hyperlexia. This can be more easily perceived by comparing the behavioural effects of hyperlexia with that of dyslexia. The comprehension problem in dyslexia is a secondary one due to difficulties in recognizing the written word (Pennington et al., 1987). Hence, dyslexics can perform normatively in listening comprehension but not in reading comprehension. On the other hand, school-going children with hyperlexia will perform way below the norm in both listening and reading comprehension, rendering the comprehension problem to be a primary one.

Described under the theoretical concept of a reading disability, hyperlexia is on the polar opposite of dyslexia (Aaron, 1989; Gough & Tunmer, 1986). The model in Figure 1 illustrates this theory through the role of decoding in reading, where reading is the product of decoding and comprehension. Three types of reading disabilities are shown: an inability to decode (dyslexia), an inability to comprehend (hyperlexia), and a mixture of both (non-specific reading disability or NSRD in short). In dyslexia, the inability to decode is coupled with good comprehension while in hyperlexia, the reverse pattern is manifested. In this way, hyperlexia is seen as a disorder of good word recognition with poor comprehension.

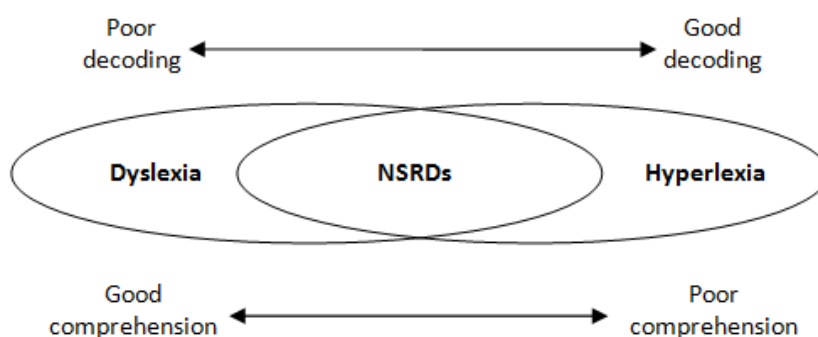


Figure 1. Bipolarity of reading disabilities (Chia, Poh, & Ng, 2009)

According to Chia (1995), there are three levels of reading comprehension: word, sentence and text levels. Hence, remediation for poor comprehension can be targeted at each level through various organizational strategies. For those struggling in mainstream schools, the difficulty would likely be at the sentence and text level if they be able to understand the meaning of isolated words. At these two levels, remediation for the cognitive impairment can be explored within the context of the cognitive load theory. In this theory, comprehension may be difficult if the text consists of many elements that must be kept in working memory at the same time. By organizing some elements into schemas such as providing a diagram, the cognitive load may be reduced, allowing the material to be understood more easily (Marcus, Cooper, & Sweller, 1996).

Intervention Strategies for Hyperlexia

Indeed, various interventions using organizational supports have been found to increase the saliency of linguistic relationships for poor-comprehenders (e.g., Åsberg & Sandberg, 2010; Clarke, Snowling, Truelove, & Hulme, 2010; Idol-Maestas, 1985; Yuill & Joscelyne, 1988). The findings in these intervention studies support the premise that poor-comprehenders do not have the instinctive organizational ability that good-comprehenders have. This was shown in the effectiveness of the organizational support for the first but not the latter who find it redundant as they instinctively see the linguistic relationships and organize the text mentally. The effectiveness of these interventions shows that support is warranted for the absence of organizational skills in poor-comprehenders. It also serves to encourage other researchers to further on their research to fill in the gaps that can make interventions ever more user-friendly and effective.

The difficulties with "Wh" questions (Deevy & Leonard, 2004; Goodwin, Fein, & Naigles, 2012; Hundert & van Delft, 2009; Schulz & Roeper, 2011) that poor-comprehenders have is such a gap. "Wh" questions are who, what, when, where, and why questions. The underlying organization of any text in relation to these interrogatives may be unrecognizable to poor-comprehenders, but it can be externalized with written support in the Scaffolding Interrogatives Method (SIM) (Chia, 2002). This method uses a matrix (a concrete resource) which can be self-generated through training. Clues to the interrogatives who/what/where/when of each sentence in a text are written in their respective columns, and further scaffolding for the clues is done with the What Interrogatives Method (WIM) (Chia, 2002). The WIM structures clues by using "what time" for when, "what place" for where, and "what person" for who. In this way, it can pre-empt poor comprehenders' deficiency in knowing what to search from the text, and their dependency on teacher support. In a study by Hundert and van Delft (2009), it was found that poor-comprehenders are least efficient in learning the organizational pattern with verbal guidance. The SIM matrix would therefore provide a better support by leveraging on their preference with written support which replaces the verbal "Wh" questions from the teacher in the two-step correction procedure from the study which teachers typically use.

A single-subject study on the SIM intervention had found improved scores for the subject during the treatment (Chia, 2002). The effectiveness thus renders the intervention an evidence-based practice. Its use in a natural classroom environment has the advantage of freeing the teacher from being tied down to providing continual assistance, and more importantly, allowing the subject to become more independent. Where test-taking is concerned, without the availability of teacher assistance, this strategy of generating a matrix independently would come in handy to work out answers. Of note, this written support can function as programmed instruction – a form of assistive technology (Blackhurst, 2005).

It is thus hoped that the SIM will serve to make mainstream inclusion of children with hyperlexia more viable through its validated utility. That said, educators must keep in mind the various sensitivities that might impede the child's performance in comprehension and remove other stimuli or reduce their effects as much as possible by providing the conducive environment, extra time and instructions which the child had missed out on. This is in effect keeping in mind, as educators, that the work cut out cannot be managed simply with the model of a reading disability.

Given that hyperlexia is a syndrome, interventions should be carried out with the awareness of the other difficulties which can co-exist with it. Much disappointment and misunderstanding can be avoided in this way, making the educator's job a more pleasant one. For example, the social imperceptions in autism may be behind the student's abrupt mannerisms and failure to execute social niceties such as saying "hello", "thank you" and "good-bye" which a neuro-typical person normally expects. Rather than to make cultural judgments on what the student fails to do, it is better to look on the positive aspects, such as the inability of persons with autism to execute deception or diplomacy that often hinders others from seeing the truth.

A more holistic way of managing hyperlexia and facilitating the development of the IEP for the student is to use the Triple-D model (see Figure 2). There are three phases in this framework: Diagnostics, Dialogics, and Didactics (Chia & Kee, 2012a).

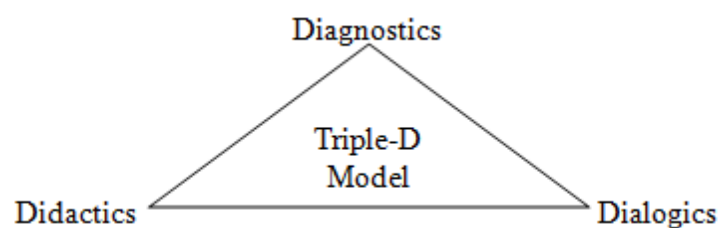


Figure 2. Triple-D Model

Diagnostics

This is the first phase whereby the educator evaluates and profiles the learner suspected of having hyperlexia. To do this, the reading disability symptom of hyperlexia can be operationalized by an unexpected reading precocity as compared to IQ, while reading comprehension is not unexpectedly deficient (Welsh, Pennington, & Rogers, 1987). In other words, the advanced word recognition skills is relative to the mental age but the reading comprehension corresponds only with the level of mental functioning (Glosser, Friedman, & Roeltgen, 1996). Hence, to identify students with hyperlexia, the following criterion can be used:

1. Reading age (R.A.) higher than expected based on mental age (M.A.).
2. Reading comprehension age (R.C.A.) lower than expected based on reading age (R.A.).

Some standardized tests for measuring word recognition and comprehension are: Schonell Graded Reading Test (Schonell & Schonell, 1950), St Lucia Graded Word Reading Test (Andrews, 1973), GAP reading comprehension test (McLeod, 1977) and Warncke Informal Comprehension Assessment (Warncke & Shipman, 1984).

A trans-disciplinary approach may be required in formal diagnostic tests with other professionals for suspected coexisting issues in autism or other developmental disorders. In this way, the diagnostic profile of the student would include more than just poor comprehension, but a validation by other professionals of the other issues inherent to the developmental disorder. For instance, the child may have sensory issues with respect to exteroceptive senses of hearing, seeing, touching, tasting and/or smelling, as well as

interoceptive senses of balance and motion of body (vestibular sense), and position of body (proprioception) (Chia & Kee, 2012a, 2012b).

With this knowledge of the child's sensory difficulties, the educator can design a more appropriate action plan to help the child and better accommodate the child's needs. Parents should be advised to obtain a more comprehensive assessment from a clinical psychologist/therapist.

Dialogics

This is the second phase in planning. The purpose of dialogics is to further the understanding and agreement on the strengths and needs of the child through communication with key persons involved. The educator can meet with the parents, teachers, the child's peers and even the child himself/herself to uncover the learning and behavioral issues of the child. If the child is old enough, he/she can be informed of his/her condition to come to an agreement and understanding of it. This might make the child more aware of himself/herself and take ownership of his/her own learning and behavior. With the sharing and agreement, there can be synergy in collaboration to help the child in the next phase of didactics.

Figure 3 shows a framework (Chia & Wong, 2011) for communication and agreement in this phase. In this framework, there are three areas (cognitive, conative and affective levels) in which the learning and behavioral issues of the child can be discussed upon.

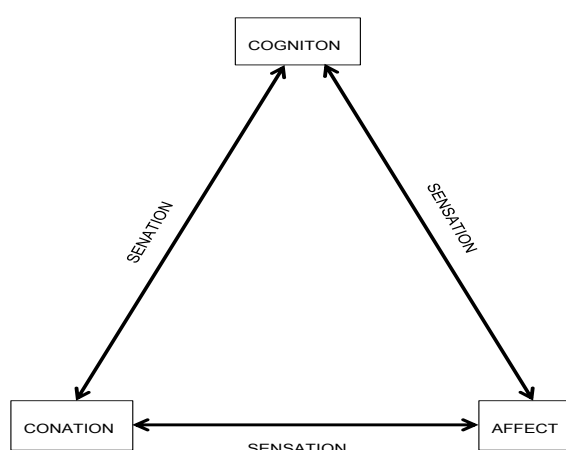


Figure 3. Framework for Understanding Students with Learning & Behavioral Issues

At the behavioral level, cognition is seen in cognitive behavior which refers to thinking; affect, affective behavior which refers to feeling; and conation, conative behavior which refers to actions (Poland, 1974). The cognitive behavioral level of a child can be seen in the answers given by the child. When for instance, a child is asked "Where is your pencil?" and the answer is incoherent, it shows that the child may not be cognizant of the question. In the game "I spy with my little eye", children display cognitive behavior by giving their answers to clues such as "something that is used for writing". The cognitive impairment in hyperlexia is usually shown in conceptual and sequential deficits. Following the triangulation of information with key persons in dialogics about cognitive issues, greater attention and support is warranted. Key persons interacting and educating the child must be engaged to help the child level up instead of leaving the child to cope with his/her own limited abilities. This is in essence, leaving no child behind.

As for affective and conative behaviors, dialogics can involve questions about the child's sensory issues, such as the contexts which may trigger hyper-sensitivity or hypo-sensitivity. Conative behavior can be seen in the child's internalizing or externalizing behaviors in response to sensory stimuli. Much as therapy can help the child recognize and keep these behaviors under control, the educator needs to be aware of the threshold at which the child will start "stimming", have a meltdown or go out of control. To avoid these situations that impede both the child's ability to learn and the educator's ability to teach, the undesired stimuli must be removed or kept to a minimum. As children have different background experiences, it may take some time for an educator to be able to pre-empt what may become an undesirable situation but the privy sharing in dialogics with key persons can make this happen more quickly. By learning from the parents, siblings, peers, therapists and psychologists, previous interventions (successes or failures) can be further built upon to avoid the pitfalls.

Didactics

In this phase, information from the diagnostics and the dialogics is used to design an appropriate action plan to help the child with hyperlexia. The plan would include details on the content to be taught, the teaching aids that can be used, the teaching methods (e.g. the SIM), the media used, and the teaching environment that will be conducive for the learner. This is in practice, setting up the resources and supports needed for the learner to achieve one's teaching objectives. Some examples of in-class supports would include assigning a buddy to the special-needs child, seating the child close to the teacher for the teacher to keep the child on-task and removing or reducing the effects of stimuli that may adversely affect the child's ability to learn.

It should be noted that the educator may not always foresee changes in circumstances as the interaction within the class is a dynamic one. For instance, the child may have a meltdown due to some contention with a classmate, or the teacher may lack the time to teach the child to apply strategies (such as the SIM) independently. Therefore, short term objectives may change, but the long term goal can still be achieved through lesson study and remediation. Reflecting on efforts to improve teaching is an essential element purported in Lesson Study which originated in Japan (Fernandez, 2002). This can be done with a mentor, a supervisor or a team who share a common interest.

Didactics should also include engaging the people within the learning environment of the special-needs child, such as the classmates, who can in turn benefit from the values of inclusion and embracing differences. The sooner the typically developing peers learn to accommodate special-needs students within the school context, the more acquiescent the society would be towards special-needs when they all grow up. To put this into context, the modified framework for Assessment, Planning, Implementation and evaluation (APIE) (Chia & Kee, 2012a, 2012b) can be used. Figure 4 illustrates this modified framework based on the human development framework of a societal ecosystem (Bronfenbrenner, 1986; Bronfenbrenner & Hamilton, 1978). It shows that student, peer, teacher, curriculum and resource, and environment factors all play into the child's performance in the modified societal ecosystem. Therefore, it is imperative these factors play a positive part and avoid offsetting the contributions that collaborative efforts can bring to the achievement of long-term goals.

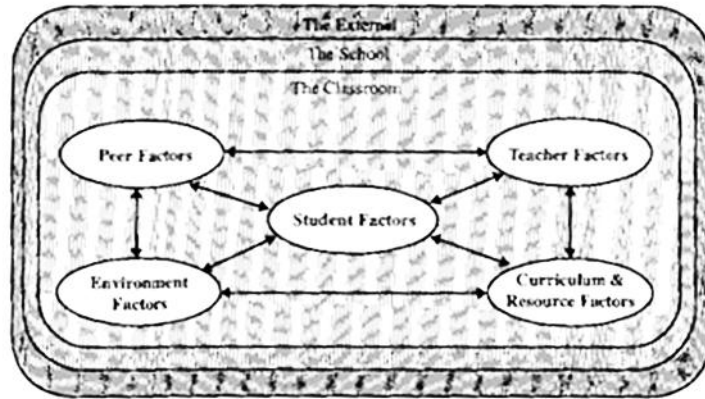


Figure 4. A modified societal ecosystem (Chia & Kee, 2012b)
(Reproduced with the authors' permission)

In conclusion, the knowledge of frameworks, models and interventions can help paint a clearer picture for educators to navigate through the planning that will support the holistic development of the child with hyperlexia. Consequently, the educator can envision what can be done to help the child see the light at the end of the tunnel and the journey together with the child to see the light can be a fulfilling one.

References

- Aaron, P.G. (1989). *Dyslexia and hyperlexia: Diagnosis and management of developmental reading disabilities*. New York, NY: Kluwer Academic/Plenum Publishers.
- Andrews, R.J. (1973). *St Lucia graded word reading test* (2nd ed.). Brisbane, Australia: Teaching and Testing Resources,
- Åsberg, J., & Sandberg, A.D. (2010). Discourse comprehension intervention for high-functioning students with autism spectrum disorders: Preliminary findings from a school-based study. *Journal of Research in Special Educational Needs*, 10, 91-98. doi: 10.1111/j.1471-3802.2010.01147.x
- ASHA (2006). *Guidelines for speech-language pathologists in diagnosis, assessment, and treatment of autism spectrum disorders across the life span* [Guidelines], from www.asha.org/policy.
- Blackhurst, A.E. (2005). Perspectives on applications of technology in the field of learning disabilities. *Learning Disability Quarterly*, 28, 175.
- Bronfenbrenner, U. (1986). Ecology of the family as a context for human development: Research Perspectives. *Developmental Psychology*, 22(6), 723-742.
- Bronfenbrenner, U., & Hamilton, S.F. (1978). School effectiveness in ecological perspective. Paper presented at the Conference on School Organization and Effects, National Institute of Education, San Diego, California, USA.

- Burd, L., Fisher, W., Knowlton, D., & Kerbeshian, J. (1987). Hyperlexia: A marker for improvement in children with pervasive developmental disorder? *Journal of the American Academy of Child & Adolescent Psychiatry*, 26, 407-412.
- Burd, L., & Kerbeshian, J. (1985). Hyperlexia and a variant of hypergraphia. *Perceptual And Motor Skills*, 60, 940-942.
- Burd, L., Kerbeshian, J., & Fisher, W. (1985). Inquiry into the incidence of hyperlexia in a statewide population of children with pervasive developmental disorder. *Psychological Reports*, 57, 236-238.
- Chia, N.K.H. (1995). Words without meaning. *Montessori Education: The International Montessori Journal*, 7, 18-19.
- Chia, N.K.H. (2002). Effectiveness of Scaffolding Interrogatives Method (SIM) - A strategy to improve a hyperlexic child's reading comprehension: A case study. *The Educational Therapist*, 23, 12-19.
- Chia, N.K.H., & Kee, N.K.N. (2012a). The triple-D framework (diagnostics, dialogics and didactics) for training of special education professionals in Singapore. *Unlimited Human!*, 36, 39-40 & 46.
- Chia, N.K.H., & Kee, N.K.N. (2012b). *Psychogogy/Salutogenesis*. Singapore: Prentice Hall.
- Chia, N.K.H., Poh, P.T.C., & Ng, A.G.T. (2009). Identifying and differentiating children with hyperlexia and its subtypes: A meta-analysis of results from WISC-III subtests and standardized reading tests. *Journal of the American Academy of Special Education Professionals, Winter issue*, 71-99.
- Chia, N.K.H., & Wong, M.E. (2011). *Psycho-educational diagnostic evaluation and profiling: A workbook for mainstream, allied and special educators* (Vol. 2). Singapore: Pearson/Prentice Hall.
- Clarke, P.J., Snowling, M.J., Truelove, E., & Hulme, C. (2010). Ameliorating children's reading-comprehension difficulties: A randomized controlled trial. *Psychological Science*, 21, 1106-1116.
- Deevy, P., & Leonard, L.B. (2004). The comprehension of wh-questions in children with Specific Language Impairment. *Journal of Speech, Language & Hearing Research*, 47, 802-815.
- Fernandez, C. (2002). Learning from Japanese approaches to professional development: The case of lesson study. *Journal of Teacher Education*, 53(5), 393-405.
- Glosser, G., Friedman, R.B., & Roeltgen, D.P. (1996). Clues to the cognitive organization of reading and writing from developmental hyperlexia. *Neuropsychology*, 10, 168-175.
- Goodwin, A., Fein, D., & Naigles, L.R. (2012). Comprehension of wh-questions precedes their production in typical development and autism spectrum disorders. *Autism Research*, 5, 109-123.

- Gough, P.B., & Tunmer, W.E. (1986). Decoding, reading, and reading disability. *Remedial and Special Education (RASE)*, 7, 6-10.
- Grigorenko, E.L., Klin, A., Pauls, D.L., Senft, R., Hooper, C., & Volkmar, F. (2002). A descriptive study of hyperlexia in a clinically referred sample of children with developmental delays. *Journal of Autism & Developmental Disorders*, 32, 3-12.
- Grigorenko, E.L., Klin, A., & Volkmar, F. (2003). Annotation: Hyperlexia: Disability or superability? *Journal of Child Psychology & Psychiatry & Allied Disciplines*, 44, 1079-1091.
- Healy, J.M. (1982). The enigma of hyperlexia. *Reading Research Quarterly*, 17, 319-338.
- Hundert, J., & van Delft, S. (2009). Teaching children with autism spectrum disorders to answer inferential "Why" questions. *Focus on Autism & Other Developmental Disabilities*, 24, 67-76.
- Huttenlocher, P.R., & Huttenlocher, J. (1973). A study of children with hyperlexia. *Neurology*, 23, 1107-1116.
- Idol-Maestas, L. (1985). Getting ready to read: Guided probing for poor comprehenders. *Learning Disability Quarterly*, 8, 243-254.
- Jackson, N.E., Donaldson, G.W., & Cleland, L.N. (1988). The structure of precocious reading ability. *Journal of Educational Psychology*, 80, 234-243.
- Kanner, I. (1943). Autistic disturbances of affective contact. *Nervous Child*, 2, 217-250.
- Marcus, N., Cooper, M., & Sweller, J. (1996). Understanding instructions. *Journal of Educational Psychology*, 88(1), 49-63.
- McLeod, J. (1977). *GAP reading comprehension test*. Victoria, Australia: Heinemann Educational.
- Mehegan, C.C., Fritz, E., & Dreifuss, M.B. (1972). Hyperlexia: Exceptional reading ability in brain damaged children. *Neurology*, 22, 1105-1111.
- Niensted, S.M. (1968). Hyperlexia: An educational disease? *Exceptional children*, 35, 162-163.
- Parker, S.W. (1919). Pseudo-latent for words. *Psychology Clinics*, 11, 1-7.
- Pennington, B.F. (1991). *Diagnosing learning disorders*. New York: The Guilford Press.
- Pennington, B.F., Johnson, C., & Welsh, M.C. (1987). Unexpected reading precocity in a normal preschooler: Implications for hyperlexia. *Brain and Language*, 30, 165-180.
- Phillips, A. (1930). Talented imbeciles. *Psychology Clinics*, 18, 246-265.

- Pierangelo, R., & Giuliani, G. (2007). *The educator's diagnostic manual of disabilities and disorders*. San Francisco, CA: Jossey-Bass.
- Richman, L.C., & Kitchell, M.M. (1981). Hyperlexia as a variant of developmental language disorder. *Brain and Language*, 12(2), 203-212.
- Schonell, F.J., & Schonell, F.E. (1950). *Schonell graded reading tests*. London, UK: Oliver and Boyd.
- Schulz, P., & Roeper, T. (2011). Acquisition of exhaustivity in wh-questions: A semantic dimension of SLI? *Lingua*, 121, 383-407.
- Semrud-Clikeman, M., & Hynd, G.W. (1990). Right hemisphere dysfunction in nonverbal learning disabilities: Social, academic, and adaptive functioning in adults and children. *Psychological Bulletin*, 107, 196-209.
- Silberberg, N.E., & Silberberg, M.C. (1967). Hyperlexia - Specific word recognition skills in young children. *Exceptional Children*, 34, 41-42.
- Suzuki, T., Itoh, S., Hayashi, M., Kouno, M., & Takeda, K. (2009). Hyperlexia and ambient echolalia in a case of cerebral infarction of the left anterior cingulate cortex and corpus callosum. *Neurocase*, 15, 384-389.
- Treffert, D.A. (2011). Hyperlexia III: separating 'autistic-like' behaviors from autistic disorder; assessing children who read early or speak late. *WMJ: Official Publication Of The State Medical Society Of Wisconsin*, 110, 281-286.
- Tuch, R.H. (2011). Thinking outside the box: A metacognitive/theory of mind perspective on concrete thinking. *Journal of the American Psychoanalytic Association*, 59, 765-789.
- Warncke, E.W., & Shipman, D.A. (1984). *Group assessment in reading: Classroom teacher's handbook*. Englewood Cliffs, NJ: Prentice-Hall.
- Welsh, M.C., Pennington, B.F., & Rogers, S. (1987). Word recognition and comprehension skills in hyperlexic children. *Brain and Language*, 32, 76-96.
- Whitehouse, D., & Harris, J.C. (1984). Hyperlexia in infantile autism. *Journal of Autism and Developmental Disorders*, 14, 281-289.
- Yuill, N., & Joscelyne, T. (1988). Effect of organizational cues and strategies on good and poor comprehenders' story understanding. *Journal of Educational Psychology*, 80, 152-158.

About the author

Patricia Mui Hoon NG is currently pursuing her Master of Education in Special Education at the National Institute of Education, where she also teaches as a part-time lecturer/tutor.

Establishing the Cognitive Writing Profile of Academically Lower-Achieving Students in Singapore: Why Is It Important?

Janet Siew Poh LAW, MEd, BA, RT-Reg.
National Institute of Education
Nanyang Technological University, Singapore

Abstract

A cognitive writing profile describes how a writer learns to write. In this paper, the author reviews the process of writing, factors affecting the writing process, literature surrounding profile of academically weaker students, and instruction on writing as a lead-in to a recommendation to develop the cognitive writing profile of lower-achieving students in the upper primary level. Given the complexity and importance of writing, this paper summarises what is already known of the process of writing and the attributes of academically weaker students, and discusses the need for a cognitive writer profile via establishing a cognitive equation for writing for academically weaker students in Singapore. In a world where literacy opens the world, where reading and writing is the foundation of literacy, the author highlights the significance of addressing the gap in research that will contribute to and document the writing learning process of lower-achieving students.

Keywords: Writing process, Instruction, Writer profile, Differentiation, Low-achieving students, Upper primary

Introduction

“All the words I use in my stories can be found in the dictionary - it's just a matter of arranging them into the right sentences” ~ Somerset Maugham

Reading the above quote makes writing sounds easy. But is it really so?

Writing is heaven to some and hell to others. Be it heaven or hell, writing, in contemporary society, is important. Even in this age of technology, the ability to write is crucial. Despite receiving less attention in research than reading, writing is a critical aspect of literacy where effective instructional techniques and models for intervention must be evaluated (Center on Instruction, 2007). In educational settings where writing is taught, are schools doing an adequate job of teaching our students to write? If so, how are our students of different academic ability learning and performing in writing? Are the profiles of academically low achieving students similar to that of their higher ability peers? If not, how can we identify the writer profile of the low achieving students and differentiate instruction to enhance their learning of writing? I believe these are questions that educators and curriculum developers are eager to find answers to.

Background

According to published data from the National Assessment of Educational Progress (NAEP), majority of the U.S. students assessed in a writing exam in 2002 were not meeting educational standards for writing proficiency; 72% of 4th graders, 69% of 8th graders, and 77% of 12th graders scored at the Basic or Below Basic levels (Persky, Daane & Jin, 2003). In the same assessment conducted in 2007, 70% of 8th graders and 76% of 12th graders scored at the Basic or Below Basic levels (Salahu-Din, Persky & Miller, 2008).

Meanwhile, in Singapore, teaching of composition writing had drawn some flakes from parents. In an open letter to Education Minister Heng Swee Keat, a parent wrote of her concern for schools in Singapore running like businesses (Edvantage, 2011). According to this parent, as a result of schools' obsession with quantifiable results, students were taught writing based on marking templates. In the example she gave, Primary schools teachers marked the language of a composition based on how many "good phrases" were used. To this end, commercial book of good phrases became part of the syllabus and the students were told to learn or memorize these phrases. Consequently, teachers ended up with scripts of almost identical introductions from all the students.

Another teacher blogged on Tumblr about the myriad of issues and difficulties faced by his P5 students when writing, calling it a "daunting" task to get them to write (Classroom Blackboard, 2012).

Research has suggested that academically low achieving students experience more difficulty in writing than their higher ability peers (e.g., Zohar, Degani and Vaaknin 2001; Raudenbush, Rowan, & Cheong, 1993). Many factors can contribute to this negative experience, including instructional, cognitive and motivational issues. To better understand how these affect the students, we must look into the process of writing.

Process of Writing

Researchers Flower and Hayes (1981), using protocol analysis method, developed a cognitive process theory of writing after observing writers in the act of writing. They reported that their protocols provided valuable data to support their theory. According to them, writers use a combination of cognitive processes when writing. These processes surface as and when needed. There are four key points to their cognitive process theory of writing. Firstly, Flower and Hayes (1981) proposed that writing is best understood as a set of distinctive thinking processes which writers orchestrate or organize during the act of composing. Secondly, the processes of writing are hierarchically organized, with component processes embedded within other components. Thirdly, writing is a goal-directed process. In the act of composing, writers create a hierarchical network of goals and these in turn guide the writing process. Lastly, writers create their own goals in two key ways: by generating goals and supporting sub-goals which embody a purpose; and, at times, by changing or regenerating their own top-level goals in light of what they have learned by writing (Flower & Hayes, 1981, p. 366-281).

Figure 1 accounts for the major thinking processes these researchers saw in their study.

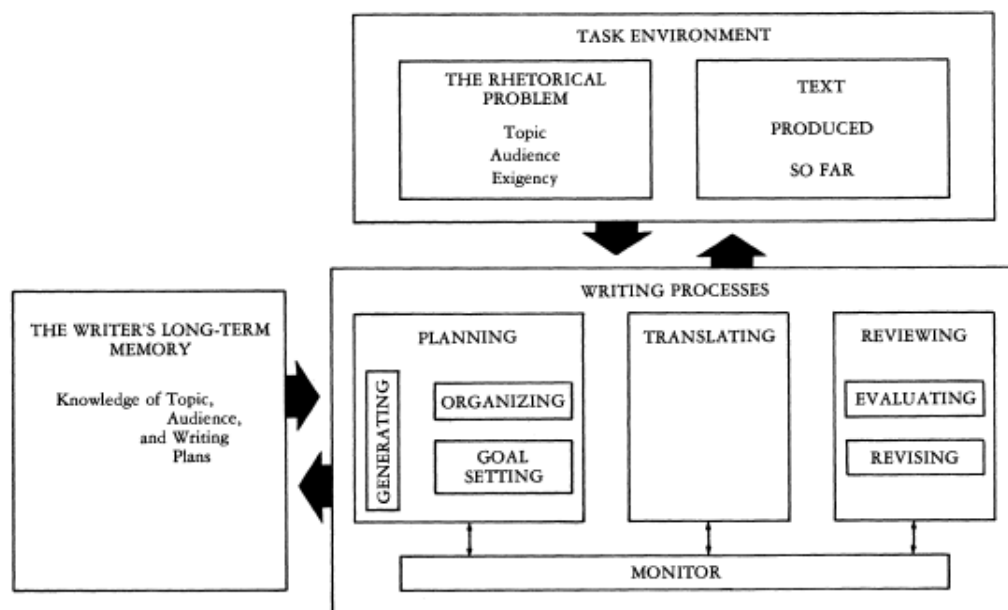


Figure 1. Structure of the writing model. Adapted from Flower & Hayes (1981). A cognitive process theory of writing, p. 370.

(Reproduced with the authors' permission)

The implications of Flower and Hayes' (1982) cognitive process model are manifold. For a start, it implies that it is common for writers to call on processes as needed. It also demonstrates a more flexible hierarchical process of writing which is recursive. In their model, goal direction is a linchpin to the writing process. Through composing, content goals grow into elaborate networks. The network has three important features, namely: (a) it is created as the writer composes, not completely during pre-writing, (b) it takes many forms including planning, translating and reviewing, and (c) writers continually return to their higher level goals while keeping their sub-goals in check. With this cognitive process model, it follows that problems experienced by writers are attributable, in part, to difficulties experienced during any of these processes.

Cognitive Equation for Writing

Agreeing that writing involves several processes that are interrelated, Chia (2007) proposed an equation (see Figure 2) to summarize the many basic processes involved for writing to become successful.

According to Chia (2007), $T(E+Co)$ forms the most fundamental part of the equation of the writing process. When a child writes, two sub-processes take place; encode (E) and compose (Co). The child needs to transform ideas into words (i.e. encode) before he or she can arrange the ideas to form a clear and unified impression to create an effective message (i.e. compose) (Harris & Hodges, 1995). For these two processes to occur (i.e. E and Co), thinking (T) has to happen. T 's role in E involves transcription, spelling and self-editing along the way. However, when T interacts with Co , ideas flow freely into the writer's mind while he or she

starts to sub-create various personal imaginary scenes. This results in fantasizing or imagination of events in the writer's personal meta-world. What follows is the organizing of thoughts or ideas to formulate a plot for the story (Chia, 1991; Lewis, 1975). Chia (2007) opined that *T* is a skill that students take with them beyond the classroom, one that can put them in good stead in the job market.

$$\mathbf{WP = S\{B[T(E = Co) + M] + P\} = WO}$$

WP – Writing Process

S – Setting (where writing task takes place)

B – Background knowledge and prior experience of writer

T – Thinking

E – Encoding

Co – Composition

M – Motivation

P – Purpose

WO – Writing outcome/output

Figure 2. Cognitive equation of writing. Adapted from Chia (2007). Bridging writing and writing, p. 7-8.

Having said so, it is important to note that for anything that anyone does, motivation is a key driving force. Similarly, for writing to happen naturally, there must be that compelling force of motivation (*M*) within the writer to want to write (Singh, 1981). This *M* was likened to an urge or itch within the writer, or simply inspiration, according to Chia (2007). Alluding this to the context of a renowned writer and author, the creator of the *Narnian Chronicle*, (i.e. Clive Staples Lewis), this *M* was influenced by the author's purpose (*P*) of writing, which was to satisfy that urge or itch within and to obtain self-satisfaction when the piece of writing was completed.

Chia (2007) further explained that *P* plays a different role in classroom settings. Children write because it is an assigned task given by the teacher and for the grades awarded. Comparing these two scenarios, Chia (2007) concluded that there are different *P*'s. The first *P* is the result of a writer's intrinsic motivation to write. The second *P* results from extrinsic motivation or external influence (i.e. to complete a class assignment and pass the formative or summative assessment). And, specific to the second *P*, two practical issues must be addressed: learning to write and writing to learn. Students do so throughout their lives (Fisher & Frey, 2004). Learning to write which encompasses encoding, spelling, sentence construction, mechanics of paragraphs, and grammar (among others) starts formally from primary school (Knipper & Duggan, 2006). These skills are refined and expanded as a student progresses to higher levels. By then, instruction starts to focus on the process of writing (i.e., pre-writing, writing, reviewing, revising, editing, and final drafting) enroute to the finished product (Walshe, 1981). On the other hand, writing to learn is different. It is because the end product is not a piece of work that will undergo revisions to become a publication but whose purpose is to serve as a catalyst for further learning and meaning making (Knipper & Duggan, 2006). As such, "the purpose for writing to learn becomes an opportunity for students to recall, clarify, and question what they know about a subject and what they still wonder about with regard to that subject matter" (Chia, 2007, p. 8). At the

same time, students discover what they know about their content focus, their language, themselves, and their ability to communicate all of that to a variety of audiences (Knipper & Duggan, 2006). That is to say, “a student’s background knowledge and prior experience (represented by *B* in the equation) in writing to learn is called into attention” (Chia, 2007, p. 9).

To Chia (2007), *B* is essential for both reading and writing. Without *B*, a writer simply scribbles and scribbles clueless of the product of writing. Hence, Chia (2007) explained that *B*’s place in the writing process is to enable the writer to bring his or her prior knowledge and experience of a subject to relevance in the current piece of writing.

Finally, Chia (2007) proposed that the setting (*S*), that is, where the writing task takes place, also plays an important part in the cognitive equation of writing. *S* can be inside or outside a classroom or home. It also includes any tangible (e.g. a dictionary to check spelling) or intangible (e.g. praise from the teacher) support.

At the end of this process is the writing outcome (*WO*) which depends on how successful the various aforementioned writing factors (i.e. *S*, *B*, *T*, *E*, *Co*, *M* and *P*) interplay during the writing process (*WP*).

Chia’s (2007) cognitive equation of writing basically implies that reading and writing are two processes that are reciprocal; Reading helps build up the background knowledge and comprehension that provides the ideas for writing. Implicit to this equation is also the observation that being able to write (and read) means having to think through the process. Further, being able to write prolifically requires a student to have a strong foundation of language system comprising of semantics, syntax and discourse. It also follows that whatever the writing outcome is depends on the writing process a student has gone through.

By now, one can appreciate that writing is a very complex activity or skill. Hence, it is reasonable to expect that students who are academically lower achieving find it difficult to write. Even the celebrated children’s book author, Dr Seuss found writing difficult when he lamented that “every sentence is like a pang of birth. *The Cat in the Hat* ended up taking well over a year” (Seuss, 1941). Nonetheless, writing is not an impossible task. To the late prolific and several award winning writer Ray Bradbury, writing is easy. To quote him, “Love is easy, and I love writing. You can’t resist love. You get an idea, someone says something, and you’re in love” (Bradbury, n.d.). In a website dedicated to him and his work, Ray Bradbury also said:

In my later years, I have looked in the mirror each day and found a happy person staring back. Occasionally I wonder why I can be so happy. The answer is that every day of my life I’ve worked only for myself and for the joy that comes from writing and creating. The image in my mirror is not optimistic, but the result of optimal behaviour (Harper Collins Publishers, 2012).

Writing was a playground to this famous writer. We certainly hope it is the same for our children who are learning to write and writing to learn in the schools. As academicians, educators and researchers, it is our hope that all students, regardless of academic ability, be able to enjoy, if not love writing.

It has been widely agreed that children learn to write by writing. In the U.S. it was reported that in a survey of 425 school districts, 90% of the respondents considered student writing to be a problem (Neill, 1982). This author is not aware of any similar poll in Singapore but going by anecdotal evidences, it should not be far from truth to say that it should be no different here. Though this is distressing, writing remains a critical area of the school curriculum and is an important part of the students' lives after school (Cotton, 1988). If we are concerned about improving our children's ability to write, we should be equally, if not more concerned about the types of the writing instruction provided in schools.

The Flower and Hayes' (1981) model and cognitive writing equation by Chia (2007) provide us with a structured understanding of how the mind works during writing and the factors affecting writing. To harness this information and use it to develop ways to help low-achieving students write better, we need to look at the profile of low-achieving students.

Profile of Low-Achieving Writers

Literature reported that papers written by struggling writers are shorter, more poorly organized, and generally weaker in overall quality when compared to that of their higher achieving peers (Englert & Raphael, 1988; Graham & Harris, 1989, 1991; Thomas, Englert & Gregg, 1987). Compositions of struggling writers were also found to typically contain more irrelevant information and more mechanical and grammatical errors, making it less readable (Deno, Marston & Mirkin, 1982; Fulk & Sotrmont-Spurgin, 1995; Graham 1990; Graham & Harris, 1991; MacArthur & Graham 1987; MacArthur, Graham & Skarvold, 1988; Thomas, Englert & Gregg, 1987). As for the difference in writing profiles between high-achieving and low-achieving L2 writers, reportedly there is no discussion due to difficulty of collecting data of strategy use during writing, and it is an area of gap that future research should address (Chien, 2008).

In Singapore, ability-based streaming at both primary and secondary levels of education dates back to 1979 with the introduction of the New Education System (NES) following the publication of the Goh Report (Ministry of Education [MOE], 1979). Under the restructured education system, ability-differentiated curriculum and extensions of schooling length for the academically weaker students were introduced at the primary and secondary school levels (Gopinathan, 2001). Over the years, following more reviews, refinements were made to the streaming systems. Terms such as "EM3", "Foundation Level", "Normal Stream", Normal (Technical) [NT], Normal (Academic) [NA], and "Institute of Education (ITE) students" were used to refer to students who were placed in the academically weaker classes or schools. Common injurious perception of low-achieving students in Singapore (e.g. NT or EM3 students) includes: (a) "stupidity", (b) "attitude not good, Ah Beng type", (c) "hopeless", (d) "can't do anything", (e) "can't go anywhere", (e) "unmotivated", (f) "lazy", and (e) "ill-disciplined" (Ser, 2004). In an early video (Ng, 1993) introducing educators to the new NT course to be implemented in 1994, the profile of students (i.e. academically low achieving ones) to be channelled through this course was described as "good working with their hands", "short attention span", "creative", "work best in groups", and "willing to learn".

In a study (Chang, Goh, Moo & Chen, 1997) conducted in 1994 to better understand the learning needs of NT students, the researchers drew several conclusions about NT students. These ranged from 'average' self-esteem which decreased as they move to the second year, 'average' academic achievement motivation and poor study habits, poor command of English

leading to inability to understand lessons, teachers find them to have short attention span, and preference for less critical teachers who provide structure for the class.

In yet another study by McInerney, Liem, Ortega and Lee (2008) which provided a general profile of what motivates Singaporean secondary students to do well in school, it was reported that NT students focused more on getting rewards for their work, social power (i.e. wanting to be leader), and wanting to improve in a given task or lesson. Furthermore, NT students reportedly have a higher self-concept in English and a lower one in Math. As well, students (from Secondary 1 to 5) with low PSLE scores rated lower in their drives for self-direction (i.e. independent thought and action), achievement (i.e., personal success through demonstrated competence) and security (i.e. safety and stability of society, relationship and of self).

Having known the “how”, that is, the process of writing, and what low-achieving students are good at and weak at, the teacher can now work on how to instruct the students in writing. And, just exactly what has research found in the area of writing instruction?

Writing Instruction

Writing instruction in school

In his article *Research in Writing Instruction: What We Know and What We Need to Know*, Troia (2007) summarized several salient findings from research in writing. Amongst these, research has shown that although there are many factors contributing to the low level of writing achievement of students in general, less than optimal writing instruction in classroom is often the factor associated to this dismal state (Bridge, Compton-Hall & Cantrell, 1997; Graham & Harris, 2002; Palincsar & Klenk, 1992; Troia, 2005; Wray, Medwell, Fox & Poulson, 2000). This was affirmed by teacher self-report data from the 1998 NAEP report (Persky, et al., 2003). In this report, despite 7 out of 10 teachers indicating that they employed process oriented instruction to teach composing, only a third of these same teachers reportedly spent 90 minutes (a bare minimum) or more per week teaching writing (National Center for Education Statistics [NCES], 1999). Similarly, Graham, Harris, Fink and MacArthur (2003) found that only slightly more than half of the primary grade teachers reported making more than one or two instructional adaptations for struggling writers, and some of these adaptations were not effectively promoting writing in areas such as development of good writing skills and motivation.

Even though students are traditionally taught to think of writing as a three-step process: (a) pre-writing, (b) writing, and (c) re-writing, in that order (Gracey, n.d.), research has shown that a three-step model is inadequate (c.f. Flower and Hayes, 1981; Chia, 2007). As a result, more effective teaching models (e.g. Cognitive Strategy Instruction in Writing (CSIW), 6+1 Trait/6 Trait Writing Model) have been developed to better match and reflect cognitive writing processes as such the ones outlined above. Interventions are also targeted to remediate problems encountered at various processes of writing as well as to match the profile or characteristic of struggling writers.

Preliminary search of literature revealed that studies also found that writing instruction often focus on mechanics, missing out on explicit instruction in how to think through the metacognitive aspects of writing, even in special education classrooms (Applebee, 1981; Bridge & Hiebert, 1985; Englert, Raphael, Anderson, Anthony, Fear, & Gregg, 1988; Goodlad, 1984; Scardamalia & Bereiter, 1986).

Writing instruction model or strategy

Since writing is an integrative, creative, recursive process that involves metacognitive knowledge and skills, writing instruction should emphasize the writing process (Christenson, Thurlow, Ysseldyke & McVicar, 1989). As such, the review of writing instruction here will focus on prominent programmes that drew upon research on the processes writing.

Researchers Anderson, Raphael, Englert & Stevens (1992) investigated both the responses of the students and the teachers to a program for writing instruction called Cognitive Strategy Instruction in Writing (CSIW). According to the researchers, the CSIW program was designed for 4th and 5th graders, including those identified with a learning disability. It was a program appropriate for students approaching middle school where the demands for more independent reading and writing in content areas in classrooms are higher. Five interrelated processes of writing: Plan, Organize, Write, Edit and Revise (P.O.W.E.R.) were reflected in the CSIW program. In addition, cognitive instructional strategies were recommended for this program. These included: (a) explicit teacher modeling (thinking aloud) about the cognitive writing processes, (b) faded off coaching by the teacher through scaffolded dialogue on authentic and personally meaningful writing tasks, and (c) maintenance of the social context where dialogue with peers on writing occurs (Anderson, et al, 1992).

In earlier analyses of the CSIW student outcome data, it was found that there was clear treatment effect associated with CSIW. Students exposed to the program in resource classroom outperformed those in a control group in the areas of writing performance and metacognitive knowledge (Englert, Raphael, Anderson, Anthony, & Stevens, 1991). The treatment effect was evident for both academically normal achieving as well as the lower achieving students identified with a learning disability. In a later analysis, Anderson et al (1992) reported that variations in teachers' practice (i.e. congruency of practice with the CSIW) raised questions on this effect. As a result, Anderson and his colleagues collected qualitative data on the teachers' beliefs and practices. Findings suggested that these factors could explain the differences in teacher congruence and student performance.

Another prominent writing model that was researched on was the Six-Trait Writing Model (6-Trait/6+1 Traits®). Traits-based approach to writing, which drew upon research on process writing, was developed in the mid-1980s in response to teachers' needs for an integrated instruction and assessment tool for effective writing (Kozlow & Bellamy, 2004). This model comes with specific strategies and materials for teachers that drew upon the research on: (a) process writing, (b) traits of writing, (c) peer groups, and (d) use of formative assessment to improve student learning. The 6+1 Trait® writing model was designed to help teachers teach and assess student writing through an analytic approach, focusing on seven traits that characterize quality writing, namely: Ideas, Organization, Voice, Word Choice, Sentence Fluency, Conventions, and Presentation. The model incorporates writing process as an integral component of a recursive set of activities that develop these seven traits (Kozlow & Bellamy, 2004). Research on this writing model has reported that students (5th grade) in the experimental group experienced a significantly higher increase in test scores for the Ideas trait when compared to students in the control group (Arter, Spandel, Culham, & Pollard, 1994). Secondly, post-treatment writing performance of 5th-grade students exposed to the 6-Trait method recorded a significant difference as compared to those who received traditional classroom instruction (Jarmer, Kozol, Nelson & Salsberry, 2000). Lastly, when pre-treatment differences were factored into the analyses for all data sets, there were no significant

differences between the mean posttest writing scores for the treatment group and the control group (Kozlow & Bellamy, 2004).

Writing instruction in schools in Singapore

The English language syllabus prescribed for primary schools in Singapore has undergone a few reviews and revisions since the 1990s. The current 2010 English Language Syllabus underscored the sustained effort of earlier syllabi in reflecting the changing aims, approaches and emphases of EL teaching and learning. According to the MOE, the syllabus is designed to be responsive to: (a) global and national concerns, (b) changing role of EL in Singapore and the world, (c) the needs of our pupils, and (d) research in language and language pedagogies. Specifically, in the area of Writing and Representing, the syllabus' focus is on the mechanics of writing for lower primary students. For upper primary students, the instructional focus is on writing and representing skills and strategies. The detailed outline of the syllabus is available at the MOE website (MOE, 2012).

In the high stake assessment educational system in Singapore, teachers are naturally experiencing pressure from delivering the prescribed curriculum within stipulated time and yet be accountable to the achievements of their students. Pressured by tests, targets and curriculum coverage, pedagogical principles may be compromised (English, Hargreaves & Hislam, 2002). There has been no research done on how effective the MOE English language syllabus is, probably due to the fact that there is no other basis for comparison and the ethical concern and constraint of having a control group for an empirical study.

Nonetheless, Albright (2006) reported that past research conducted at the National Institute of Education (NIE) revealed that majority of mainstream and underperforming students were rarely offered the chance for engaged learning. This was confirmed in another on pedagogical change in NT classrooms. In that study, Albright and Ismail (2006) observed that the salient features of the NT curriculum are worksheets, behaviour and time-on-task management, drill and review. Reportedly, there was less emphasis on subject matter integration, acquisition of meta-languages and analysis. Instead of actively producing and constructing knowledge, the NT students were required to reproduce information. Additionally, these NT students were not encouraged to contextualize new knowledge, either theoretically or practically. Post-intervention on teaching results showed that the low expectations and deficit thinking by NT teachers about their student encompassed areas of student behaviour, writing, reading, cognitive abilities and attitudes towards school. This deficit thinking influenced the pedagogy, manifesting in: (a) assignment of decontextualized low level tasks, (b) focus on discrete skills, facts and rote learning, (c) lack of alternative assessment, (d) dumping down of curriculum with breaking down of lesson and concepts to smaller bits, and (e) prevalence of teacher-centred approaches with chalk-and-talk pedagogy primarily adopted (Albright & Ismail, 2006).

In the study by McNerney, Liem, Ortiga and Lee (2008) it was reported that NT students were found to have a significantly higher endorsement of both surface (e.g. memorization) and deep (i.e. organizing new information, relating ideas, and monitoring their understanding of learning materials) learning strategies. However, low-performing students in Math preferred surface learning strategies.

In their ethnographic study on academically low track students from NT, Ismail and Tan (2005) observed that students were largely exposed to the pedagogy of reproductive transmission of knowledge with highly prescriptive tasks. This resulted in the students

becoming passive receivers of knowledge. The study highlighted the importance of teachers and students co-constructing the learning environment, one that facilitates meaningful teaching and learning. At the end of their study, Ismail and Tan (2005) proposed that to enable the students to have a richer and more meaningful school experience, they should be exposed to some form of metacognitive strategies where they can “actively plan how to learn, monitor their progress, and evaluate their own achievements” (p. 8).

Literature review threw up one research on EM3 students in Singapore. In this study, Ng (2004) reported that majority of the EM3 pupils perceived that the work assigned to them was easier and more interesting than that of their higher ability EM1/2 counterparts. Reflective of other studies, the findings revealed that teachers had a deficit construct of EM3 students which adversely affected their perceived educability of these students. Similarly, attributes such as ‘lazy’, ‘forgetful’, ‘restless’, ‘slow’, and ‘disruptive’ were associated by the teachers with the EM3 students. As a result of this negative association, teachers focused on discipline in their interaction with these students. On a positive note, majority of the EM3 students in this study reported that they liked to attend remedial class and tried hard to do their work. The bulk of them were also confident of passing and making it to the NA stream for secondary education. Teachers polled opined that these students needed a more structured syllabus with the focus on mechanical skills. Systematic instruction with a bottom-up approach was thought to be necessary. The pedagogical choice was also reflective of the other studies; Teachers felt that these students would not be able to cope with challenging or demanding tasks. Drilling and rote learning were offered as “creative” teaching methods appropriate for the EM3 students.

Recommendations

The teacher’s task, when working with students in the learning of writing is to enter the student’s writing process at various points, assess the strengths and weaknesses, and make suggestions or give strategies to the students for improvement. The complexity of writing as outlined above means failure in writing can be multi-faceted and its causes many and varied. As such, to better develop instructions for teaching writing for low-achieving students, this author proposes that a cognitive equation for writing for these students be developed - a cognitive equation that takes into account the writing processes, factors and components or sub-components of writing learning. Literature search does not seem to throw up any research done so far in this aspect.

It is common knowledge that reading and writing is the foundation for literacy. There is a wealth of research on reading. Comparatively, research on writing is less. Research on the practice of writing instruction in the classrooms of primary schools in Singapore is especially scarce, if any. In particular, research on differential instruction in writing for upper primary students who were streamed to the foundational level for English is non-existent. Similarly, there is a dearth of research evaluating writing programmes that promotes learning for the academically low achieving students in Singapore. Most of the research carried out on academically weaker students involved students in the secondary (e.g. Normal Technical) and post-secondary level (e.g. Institute of Education). Many of these focused on issues faced by teachers, with a view to build capacity and pedagogical change to help the teachers better match the learning needs of academically lower achieving adolescents in our education system. All these point to a gap in research where describing and documenting the cognitive

learning profile of academically weaker students can contribute significantly to the literacy development of the lower-achieving students in Singapore.

It is thus proposed that the writing behaviour of academically low achieving upper primary students in Singapore be profiled with a view to establish the cognitive equation for the writing process of these students. A cognitive equation for writing can explain the underlying causes of failure in learning of writing. It can also inform English language (EL) teachers what they ought to know and how best they could go about helping these children write better. By describing the ways low-achieving students learn to write cognitively, a cognitive equation for writing that takes into account the writing process and factors affecting the writing process can facilitate successful transition across stages of writing learning and acquisition, leading to development of more effective differential instructional strategies that better match the writing and learning profile of the academically weaker students. Further, establishing the writing profile of these academically low-achieving students vis-à-vis their higher ability peers can also help curriculum planner make informed decision on curriculum and resource differentiation and so as to better match the needs of all students.

Hence, studies conducted to help identify the writing profile and cognitive equation for writing instruction for young low-achieving school students in Singapore will be instrumental and are highly encouraged. This is especially crucial for the upper Primary level where writing instruction begins to take more emphasis and school demand in this area is higher. It is also hoped that findings from such studies can result in recommendations to enhance the approach to EL teaching to strengthen the foundation of language learning for school students, particularly for the academically lower achieving students. A better understanding of how writing works for weaker students can yield relevant curriculum and pedagogy that serves to provide appropriate experience for meaningful writing and language learning for these struggling writers. With this, writing could perhaps be heaven instead of hell for many students.

Conclusion

Learning (and in this case, learning to write) is a very complex task and facilitating successful learning is an art as well as a science. Using knowledge of student cognition, augmented by knowledge of the process and factors affecting learning to develop and differentiate instruction would appear to be a logical as well as relevant, if not crucial pedagogy for all educators. Identifying the cognitive writing profile for low-achieving students can provide us a window into some of the learning issues and conditions for learning that emerge in the learning of EL in the Singapore educational context. In particular, for the academically lower achieving students who needed more help, doing so can contribute to literature on the written language development of low achieving students in Singapore. The resultant development of differentiated instruction to help these students learn better will also meet the objective of the MOE's initiative to provide students with customized and differentiated learning experiences so as to realize their potentials. By then, we may hear our students say, like Somerset Maugham did, that writing is simply a matter of rearranging words into right sentences.

References

- Albright, J. (2006). *Building teacher capacity in curriculum and pedagogical design in normal technical classrooms* [Report]. Paper presented at the annual meeting of the Educational Research Association of Singapore, Singapore, 2006. Retrieved from: <http://repository.nie.edu.sg/jspui/handle/10497/3360>
- Albright, J. & Ismail, M. (2006). *Issues facing teacher curricular and pedagogical capacity in mature and emerging education systems*. Paper presented at AARE conference, Adelaide, Australia, 27-30 November, 2006. Retrieved from: http://repository.nie.edu.sg/jspui/bitstream/10497/4584/3/alb06175_a.pdf.
- Anderson, L.M., Raphael, T.E., Englert, C.S., & Stevens, D.D. (1992). *Teaching writing with a new instructional model: Variations in teachers' beliefs, instructional practice, and their students' performance* (Issue 209). Washington, DC: National Center for Research on Teacher Learning, Office of Educational Research and Improvement.
- Applebee, A.N. (1981). *Writing in the secondary school: English and the content areas*. Urbana, IL: National Council of Teachers of English.
- Arter, J., Spandel, V., Culham, R., & Pollard, J. (1994). *The impact of training students to be self-assessors of writing*. New Orleans. Paper presented at AERA.
- Bradbury, R. (n.d.). *The joy of writing: Quotes from Ray Bradbury*. Retrieved from: <http://yourturntojump.tumblr.com>
- Bridge, C.A., Compton-Hall, M., & Cantrell, S.C. (1997). Classroom writing practices revisited: The effects of statewide reform on writing instruction. *Elementary School Journal*, 98, 151-170.
- Bridge, C., & Hiebert, E. (1985). A comparison of classroom writing practices, teachers' perceptions of their writing instruction, and textbook recommendations on writing practices. *Elementary School Journal*, 86, 155-172.
- Center on Instruction (2007). *A synopsis of a synthesis of empirical research on teaching mathematics to low achieving students*. Portsmouth, NH: RMC Research Corporation.
- Chang, A.S.C., Goh, S.C., Moo, S.N., & Chen, A.Y. (1997). *Report on motivation and classroom behaviour of normal technical students*. Singapore: Centre for Educational Research, National Institute of Education (NIECER).
- Chia, N.K.H. (1991). The imaginative creation of metaworlds in the recreational reading process. *Education Today*, 41(3), 22-25.
- Chia, N.K.H. (2007). Briding reading and writing: A cognitive equation of literacy. *ASCD Review*, 13, 5-12.
- Chien, S.C. (2008). *A Cognitive Analysis of the Relationships between Chinese EFL Writers' Strategy Use and Writing Achievement Performance*. Cambridge Occasional Papers in Linguistics (COPiL).

- Christenson, S.L., Thurlow, M.L., Ysseldyke, J.E., & McVicar, R. (1989). Written language instruction for students with mild handicaps: Is there enough quantity to ensure quality? *Learning Disability Quarterly*, 12(3), 219-229.
- Classroom Blackboard. (August 2, 2012). *Type with me* [Blog post]. Retrieved from: <http://tumblr.co/ZwUbbYQcKVRN>.
- Cotton, K. (1988). Teaching composition: Research on effective practices. *Topical Synthesis No. 2. School Improvement Research Series II*. Northwest Regional Educational Laboratory, Portland, OR.
- Deno, S.L., Marston, D., & Mirkin, P. (1982). Valid measurement procedures for continuous evaluation of written expression. *Exceptional Children*, 48, 368-371.
- Edvantage (June, 2011). *A parent's letter to education minister Heng Swee Keat*. Retrieved from: http://www.edvantage.com.sg/edvantage/features/hottopics/opinion/649044/A_letter_to_education_minister_Heng_Swee_Keat.html
- Englert, C.S., & Raphael, T.E. (1988). Constructing well-formed prose: Process, structure and metacognitive knowledge. *Exceptional Children*, 54, 513-520.
- Englert, C.S., Raphael, T.E., Anderson, L.M., Anthony, H.M., Fear, K., & Gregg, S.L. (1988). A case for writing intervention: Strategies for writing informational text. *Learning Disabilities Focus*, 3, 98-115.
- Englert, C.S., Raphael, T.E., Anderson, L.M., Anthony, H.E., & Stevens, D.D. (1991). Making writing strategies and self-talk visible: Cognitive strategy instruction in writing. *American Educational Research Journal*, 28, 337-373.
- English, E., Hargreaves, L., & Hislam, J. (2002). Pedagogical dilemmas in the national literacy strategy: Primary teachers' perceptions, reflections and classroom behaviour. *Cambridge Journal of Education*, 32(1): 9-26.
- Fisher, D., & Frey, N. (2004). *Improving adolescent literacy: Strategies at work*. Upper Saddle River, NJ: Pearson Education.
- Flower, L., & Hayes, J.R. (1981). A cognitive process theory of writing. *College Composition and Communication* 32(4), 365-387.
- Fulk, B.M., & Stormont-Spurgin, M. (1995). Spelling interventions for students with disabilities: A review. *Journal of Special Education*, 28, 488-513.
- Goodlad, J.I. (1984). *A place called school: Prospects for the future*. New York, NY: McGraw-Hill.
- Gopinathan, S. (2001). Globalisation, the State and Education Policy in Singapore. In J. Tan, S. Gopinathan & W. K. Ho (Eds.), *Challenges Facing the Singapore Education Today* (pp. 8-14). Singapore: Prentice Hall/Pearson Education.

- Gracey, C. (n.d.). Mastering the writing process: Few successful writers follow a stage model of writing. *Back to College*. Retrieved from: www.back2college.com/writprocess.htm.
- Graham, S. (1990). The role of production factors in learning disabled students' compositions. *Journal of Educational Psychology*, 82, 781-791.
- Graham, S., & Harris, K.R. (1989). A component analysis of cognitive strategy training: Effects on learning disabled students' compositions and self-efficacy. *Journal of Educational Psychology*, 81, 353-361.
- Graham, S., & Harris, K.R. (1991). Self-instructional strategy development: Programmatic research in writing. In B.Y.L. Wong (Ed.), *Contemporary intervention research in learning disabilities: An international perspective* (pp.47-64). New York, NY: Springer-Verlag.
- Graham, S., & Harris, K.R. (2002). Prevention and intervention for struggling writers. In M. Shinn, H. Walker, & G. Stoner (Eds.), *Interventions for academic and behavior problems II: Preventive and remedial techniques* (pp.589-610). Washington, DC: The National Association of School Psychologists.
- Graham, S., Harris, K.R., Fink, B., & MacArthur, C.A. (2003). Primary grade teachers' instructional adaptations for struggling writers: A national survey. *Journal of Educational Psychology*, 95, 279-292.
- Harper Collins Publishers. (June, 2012). *Home page*. Retrieved from: <http://www.raybradbury.com/>
- Harris, T.L., & Hodges, R.E. (Eds.) (1995). *The literacy dictionary: The vocabulary of reading and writing*. Newark, DE: International Reading Association.
- Ismail, M., & Tan, A.L. (2005). *Voices from the normal tech world - An ethnographic study of low-track students in Singapore*. Singapore: National Institute of Education, Centre for Research in Pedagogy and Practice.
- Jarmer, D., Kozol, M., Nelson, S., & Salsberry, T. (2000). Six-trait writing model improves scores at Jennie Wilson Elementary. *Journal of School Improvement*, 1(2), 29-32.
- Knipper, K.L., & Duggan, T.J. (2006). Writing to learn across the curriculum: Tools for comprehension in content area classes. *The Reading Teacher*, 59(5), 462-470.
- Kozlow, M., & Bellamy, P. (2004). *Experimental study on the impact of the 6+1 Trait® writing model on student achievement in writing*. Boston, MA: Centre for Research, Evaluation, and Assessment, Northwest Regional Educational Laboratory.
- Lewis, R. (1975). Fiction and the imagination. *Children's Literature in Education*, 19, 172-177.

- MacArthur, C.A., & Graham, S. (1987). Learning disabled students' composing with three methods: Handwriting, dictation, and word processing. *Journal of Special Education*, 21, 22-42.
- MacArthur, C.A., Graham, S., & Skarvold, J. (1988). *Learning disabled students' composing with three methods: Handwriting, dictation, and word processing* (Technical Report No. 109). College Park, MD: Institute for the Study of Exceptional Children and Youth.
- McInerney, D.M., Liem, A.D., Ortiga, Y.Y., & Lee, J.Q. (2008). *Building the future for Singaporean students: The relationship of values, future vision, motivational profiles and learning to school success* (Project No. CRP 3/07 DM) [Conference Paper]. Paper presented at the CPDD-CRPP Research Seminar 1: A curriculum specialists professional development programme. Singapore: Singapore Management University.
- Ministry of Education. (1979). *Report on the Ministry of Education*, Singapore: The Author.
- Ministry of Education. (2012). *2010 English language (primary and secondary — express / normal (academic)) syllabus*. Retrieved from: <http://www.moe.gov.sg/education/syllabuses/english-language-and-literature/>
- Neill, S.B. (1982). *Teaching writing: Problems and solutions*. Arlington, VA: American Association of School Administrators.
- Ng, I.S.P. (2004). *Perspectives on streaming, EM3 pupils and literacy: Views of participants*. Unpublished B.A. (Honors) thesis, National Institute of Education, Nanyang Technological University, Singapore.
- Ng, M. (1993). *The Normal (technical) course* (Video-recording). Singapore: Curriculum Development Institute of Singapore.
- Palincsar, A.S., & Klenk, L. (1992). Fostering literacy learning in supportive contexts. *Journal of Learning Disabilities*, 25, 211-225.
- Persky, H.R., Daane, M.C., & Jin, Y. (2003). *The Nation's Report Card: Writing 2002* (NCES 2003-529). National Center for Education Statistics, Institute of Education Sciences. U.S. Department of Education, Washington, D.C. Retrieved from: <http://nces.ed.gov/nationsreportcard/pdf/main2002/2003529.pdf>.
- Raudenbush, S.W., Rowan, B., & Cheong, Y.F. (1993). Higher order instructional goals in secondary school: Class, teacher and school influences. *American Educational Research Journal*, 30(3), 523-553.
- Salahu-Din, D., Persky, H., & Miller, J. (2008). *The Nation's Report Card: Writing 2007* (NCES 2008-468). National Center for Education Statistics, Institute of Education Sciences, U.S. Department of Education, Washington, D.C. Retrieved from: <http://nces.ed.gov/nationsreportcard/pdf/main2007/2008468.pdf>
- Scardamalia, M., & Bereiter, C. (1986). Written composition. In M. C. Wittrock (Ed.), *Handbook of research on teaching* (3rd ed., pp.778-803). New York, NY: Macmillan.

- Ser, D. (2004). *I really not stupid* (Videorecording of 'Get Real' episode). Singapore: Channel NewsAsia, MediaCorp News.
- Seuss, D. (1941). *Pocket book of boners*. New York, NY: Pocket Books.
- Singh, K. (1981). Poetry writing. In J.Lim and C.S. Peh (Eds.), *A drop of rain, a single flame: Winning entries of the workshop on creative writing and literary appreciation 1980* (pp. 8-9). Singapore: Educational Publications Bureau.
- Thomas, C.C., Englert C.S., & Gregg, S. (1987). An analysis of errors and strategies in the expository writing of learning disabled students. *Remedial and Special Education*, 8, 21-30.
- Troia, G.A. (2005). Writing instruction for students with learning disabilities. In C.A. MacArthur, S. Graham, & J. Fitzgeralds (Eds.), *Handbook of writing research* (pp. 324-336). New York, NY: Guilford.
- Troia, G.A. (2007). Research in writing instruction: What we know and what we need to know. In M. Pressley, A.K. Billman, K.H. Perry, K.E. Refitt, & J.M. Reynolds (Eds.), *Shaping literacy achievement: Research we have, research we need* (pp.129-156). New York, NY: Guilford Press.
- Walshe, R.D. (1981). *Every child can write*. New South Wales: Primary English Teaching Association.
- Wray, D., Medwell, J., Fox, R., & Poulson, L. (2000). The teaching practices of effective teachers of literacy. *Educational Review*, 52, 75-84.
- Zohar, A., Degani, A., & Vaaknin, E. (2001). Teachers' beliefs about low-achieving students and higher order thinking. *Teaching and Teacher Education*, 17, 469-485.

About the Author

Ms Janet Siew Poh LAW, a certified Reading Therapy Specialist cum Neuro-Linguistic Programming (NLP) coach and life coach in private practice, is a research associate with the Early Childhood and Special Education (ECSE) academic group in the National Institute of Education (NIE). She has been a volunteer with *kidsREAD* since 2005.

Specific Language Impairment: What is it? How does it affect children?

Arnold Chee Keong CHUA, BSc
M.Ed (Special Education) Candidate
Kits4Kids Special School, Singapore

Abstract

This paper provides an overview of Specific Language Impairment (SLI) – language impairment in the areas of comprehension, production, or both, without any neurological impairment, hearing impairment, general intellectual functioning, and autism diagnosis (Schwartz, 2009). Controversy has been going on with debates among speech and language therapists, psychologists, and researchers over the definition, criteria, and the heterogeneous nature of children with SLI (Botting & Conti-Ramsden, 2000). Terminology, definition, diagnosis, prevalence, characteristics, etiology, and prior studies of SLI are briefly discussed. Finally, an informal checklist is also provided to help parents and educators to identify preschoolers at risk of having SLI.

Keywords: Specific Language Impairment, Dyslexia, Phonological Processing, Memory

Introduction

Late talking of children is a major concern for most parents. Toddlers who talk late before preschool run a high risk of speech and language delay (Petrucci, Bavin, & Bretherton, 2012). It is also of clinical importance to practitioners who provide early intervention services (Roos, Ellis, & Weismer, 2008). Children who talk late are typically identified at age 2 years when they showed delay, and/or impairment in language production and their language often falls behind that of typically developing children without any speech and language delay. Research also shown delays in language production and comprehension has a great impact on their educational and academic achievement (Chia, Yap, & Ng, 2010; Reilly, Wake, Ukoumunne, Bavin, Prior, & Cini, 2010). Speech impairments and language impairments are two major groups under communication disorders. Though these two impairments are related, they are actually separate disabilities (Pierangelo & Giuliani, 2007).

Of late, there has been a sporadic research done on developmental language disorders, especially in the areas of oral and written language disorders. Among these, the most widely studies performed on written language disorder is dyslexia. Research has shown that a deficit in phonological processing in many children with dyslexia. As for oral language, the most frequently researched developmental disorder is Specific Language Disorder (SLI) in which children demonstrated deficits in semantics, syntax, and discourse (Bishop & Snowling, 2004; Catts, Adlof, Hogan, & Weismer, 2005; Petrucci, Bavin, & Bretherton, 2012; Vandewalle, Boets, Ghesquiere, & Zink, 2012).

Compared to autism spectrum disorders, attention deficit hyperactivity disorders, and dyslexia, Specific Language Impairment (SLI) is seldom heard of in Singapore. This is partly due to limited public awareness and the low incidence rate of the disorder. According to Bishop (2009), SLI has received very little media coverage and limited research funding when compared to learning disorders like autistic disorder and developmental dyslexia.

The onset for SLI is during the preschool years for children whose language does not develop at an expected rate (Tager-Flusberg & Cooper, 1999). The problems experienced by children with SLI often include reading, mathematics, and oral language through their school years. If undiagnosed and untreated, this disorder will persist throughout their lifespan.

The aim of this paper is to provide an overview of specific language impairment, its definition, characteristics, prevalence, diagnosis, relationship between SLI and dyslexia, previous studies on SLI, and educational implications of SLI. It is hoped that this paper provides valuable information on SLI to parents, educators, professionals, and the public so as to help children who are at risk or suspected to have this learning disorder to help them overcome their language difficulties.

Terminology of Specific Language Impairment (SLI)

Over the years, several terms have been used by researchers, such as Specific Language Impairment (SLI), Specific Speech and Language Impairment (SSLI), Specific Language Disorder (SLD), Specific Speech & Language Disorder (SSLD) and Language Learning Disability (LLD) are used in the literature. Currently, the term SLI is more frequently used in the current literature and this review paper also follow suit.

Definition of SLI

Over the years, there has been controversy on the explanation and definition of SLI. Though numerous researches have been done, there is still limited uniform definition and measures that are used to identify and diagnose children with SLI during their preschools (Tager-Flusberg & Cooper, 1999). According to Tager-Flusberg and Cooper (1999), children who are suspected with SLI may be identified before age 3 while Petrucci, Bavin, and Bretherton (2012) mentioned that children suspected with SLI can be identified reliably by age 4 with standardized assessment tools. Once identified, these children with SLI are likely to exhibit poor language abilities throughout their childhood and early adulthood (Brizzolara et al., 2011). Due to the controversy of definition of this disorder and the heterogeneous nature of the group of children, many of them are critically under-diagnosed (Botting & Conti-Ramsden, 2001; Dockrell & Lindsay, 2001).

According to Schwartz (2009), SLI is defined as language impairment in the areas of comprehension, production, or both, without any neurological impairment, hearing impairment, general intellectual functioning, and autism diagnosis. Children with SLI may demonstrate deficits in oral language in the areas of phonology, semantics, syntax, morphology, and pragmatics. Under IDEA 2004, SLI is defined as “a communication disorder, such as stuttering, impaired articulation, language impairment, or a voice impairment that adversely affects a child’s educational performance” (Pierangelo & Giuliani (2007).

Diagnosis for SLI in Children

Both the Diagnostic and Statistical Manual of Mental Disorders-IV (DSM IV, 1994) and the International Classification of Diseases-10 (ICD-10) state exclusionary and discrepancy criteria for a diagnosis of SLI. These include the following: (1) Language skills, as assessed on standardized tests, are below the 2 standard deviations limit for the child's age; (2) language skills are at least 1 standard deviation below non-verbal IQ as assessed on standardized tests; (3) no neurological, sensory, or physical impairments that directly affect use of spoken language, nor a pervasive developmental disorder; and (4) a distinction is made between receptive language disorder, where comprehension is more than 2 standard deviations below age level, and expressive language disorder, where only expressive language is so severely affected, and where understanding is within 2 standard deviations limit for the child's age.

In addition, the DSM-IV also includes a criterion that the "language difficulties interfere with academic or occupational achievement or with the social communication" of the individual with SLI. Stark and Tallal (1981) additional criterion includes the performance IQ, or non-verbal IQ, to be 85 or above.

Appendix A provides an informal checklist on SLI re-designed by Chia (2012) basing on the characteristics of the SLI listed by Chia and Poh (2009).

Prevalence of SLI

It is difficult to provide an accurate figure for the prevalence of SLI as the precision depends on the diagnostic criteria and children's age (Bishop et al., 1999). Tallal et al. (1989) projected an estimate of about 8% to 15% of preschoolers diagnosed with some form of speech and language disorder. A decade later, SLI affects around 3% to 10% of preschool children (Tomblin et al., 1997). According to Simpson and Rice (2002), the prevalence in United States for preschool children with SLI is in the range from 6% to 8% with an onset as early as three or four years old. This figure is much more when compared to Down syndrome or autism spectrum disorder which have less than one percent of the five-year old children. There is no exact figure for the prevalence for children with SLI in Singapore. According to the Child Development Unit in National University Hospital in Singapore, an estimated 11% to 20% of cases of children are being referred with speech and language disorders from 2006 and 2007 (refer http://www.med.nus.edu.sg/paed/academic/AM_speech_lang_disorders.htm).

Characteristics of SLI

Children with SLI generally exhibit a delay in their language development, especially in the area of vocabulary (Joanisse, 2004), grammar (Rice, 2000; 2002), and discourse skills (Levy, 2003).

Following are several descriptions and characteristics of SLI by past researchers: delay in talking (first words may not appear until 2 years of age or later), immature production of speech sounds, especially during preschool, limited vocabulary in both production and comprehension, difficulties in understanding complex language, and deficit in short-term memory (difficulties during words or sentences repetition) (Bishop, Adams & Norbury, (2006); a severe delayed language development without any hearing disorders, behavioral or emotional disorders, neurological impairments, or mental retardation (Plante, 1998); deficits

in semantics (vocabulary), syntax (grammar), and discourse in the presence of non-verbal (performance) IQ (Tager-Flusberg & Cooper, 1999); an impairment of language production and/or comprehension, in the absence of hearing impairment, general developmental delay (normal performance IQ), neurological impairments, and autism diagnosis (Schwartz, 2009); and language skills below chronological age expectations that is hard to be explained by below normal non-verbal intelligence (performance IQ), sensory impairments, or a social-pragmatic profile that is related with autism spectrum disorder (Archibald & Gathercole, 2007).

In the Educator's Diagnostic Manual of Disabilities and Disorders (EDM) by Pierangelo and Giuliani (2007), the characteristics are: improper use of words and their meanings, inability to express ideas, inappropriate grammatical patterns, reduced vocabulary, and inability to follow directions.

Etiology of SLI

Genetics: There has been evidence that SLI may be caused by genetic contribution and the causes are possibly to be multi-factorial (Leonard, 2009). According to Bishop, Adams and Norbury (2006), research using 173 twin pairs proposed that grammatical computation and phonological memory (short-term memory) carried a genetic factor. In the study, it was reported that SLI affects about 50% of the children of an affected parent. This is caused by a mutation that affects a tiny piece of DNA on a gene on chromosome 7, known as *FOXP2*. Further research on *FOXP2* found that it is a gene that regulates the activity of other genes that have an effect on the development of many organs such as the brain systems that is crucial for speech and language (Fisher, 2005). Studies using structural and functional brain-imaging have shown that affected family members have abnormalities in the caudate nuclei and cerebellum as well as in Broca's area, a classic language center (Vargha-Khadem, Gadian, Copp, & Mishkin, 2005).

Young children with a family history of dyslexia often have delays in their early oral language development. This suggests a phenotypic and etiological overlap with SLI. As for older children with developmental dyslexia, they often have oral language impairment where reading and writing is involved (Bishop & Snowling, 2004). In addition, children with SLI generally possessed weaknesses in phonological processing skills that are considered as a characteristic of developmental dyslexia.

Environmental Factors: The causes of SLI can be multi-factorial and it is hard to prove its exact incidence. According to Bishop (1997), as cited in Bishop and Snowling (2004), factors such as lack of a language-rich environment at home and other settings (insufficient verbal stimulation), neurological impairments related with perinatal problems, and middle ear disease with mild to moderate hearing loss could cause an impairment in oral developmental disorder. Such environmental factors could exacerbate in a child who are already running a high risk of genetic predisposition. To date, there is yet to have any empirical findings in gene-environment interaction (Bishop & Snowling, 2004).

The success or failure in children's reading achievement lies at home and school. Educational experiences and home environment are very crucial as they provide ample learning opportunities for children to socialize and communicate among their peers. Rutter and Maughan (2002) cited that the qualities of school have a direct and strong impact on students' academic, behavioral and social progress after taking into consideration of their backgrounds

and characteristics upon school entry. School climate such as class size, teachers' quality in teaching, class gender ratio, and peer influences were all contributing factors to children's literacy development.

Previous Studies

A significant body of research has been conducted on the underlying cognitive processes that underpin the language deficits of children with SLI and dyslexia. Most of the studies done were on phonological processing skills and working memory. The following section will discuss on some of the previous findings based on memory and phonological processing skills.

Memory

Results from various studies supported the findings that children with SLI had memory deficits (Archibald & Joanisse, 2009; Dodwell & Bavin, 2008; Lum, Conti-Ramsden, Page, & Ullman, 2011; Petruccelli, Bavin, & Bretherton, 2012; Vandewalle, Boets, Ghesquiere, & Zink, 2012). Substantial evidence found that children with SLI had deficits in phonological memory with regards to digit span recall (Archibald, Gathercole, 2006b; Briscoe & Rankin, 2009; Nickisch & von Kries, 2009; Lum et al., 2011; Petruccelli, Bavin, & Bretherton, 2012). Digit span recall involves processing of verbal information (repeating and reversing the correct order of digits) and also retention of the digits (short-term memory). A recent study by Lum and colleagues (2011) found that children of age 10 with SLI exhibited difficulty in retaining phonological representations of material and engaging in any type of information processing concurrently. In contrast, findings from Petruccelli, Bavin, and Bretherton (2012) found no support for children with SLI on backwards digit recall task when compared to children with typically language development. Comparing to other studies (e.g., Archibald, Gathercole, 2006; Briscoe & Rankin, 2009; Lum et al., 2011), age of the children plays an important part in the study. Children in the study of Petruccelli et al. (2012) were young (5-year-old) as compared to other studies (e.g., Briscoe & Rankin (2009) with 7 to 10 years; Archibald & Gathercole (2006) with 7 to 11 years children). Such children may not possess the ability to coordinate both verbal information and storage simultaneously. According to Best and Miller (2010), the developmental milestone of working memory is directly proportional to the continuing maturation from early childhood to adolescence. It also depends on the cognitive loads (amount of processing) of the assigned tasks. In other words, less demanding tasks require less working memory and vice versa.

Several studies have also been done with children in word recall (Briscoe & Rankin, 2009; Lum et al., 2011). An alternative explanation given by Conti-Ramsden & Durkin (2007) is that children with SLI typically possessed persistent working memory problems in that they scored significantly lower in verbal short-term memory as assessed by a digit span forward task (started with a sequence of two digits with an increment of one digit after three trials) and a non-word repetition task (48 non-words with gradual difficulty level from two to five syllables). A deficit was found in verbal storage of children with SLI using non-word repetition (Coady & Evans, 2008; Lum et al., 2011) where it involves the ability to repeat words that are unfamiliar with multiple syllables such as *blonterstapping* or *dopeltate*. A recent study by Petruccelli, Bavin, and Bretherton (2012) compared performance on the different components of memory (i.e., phonological memory, episodic buffer, visuo-spatial memory, and central executive) based on Baddeley's working memory model (Baddeley,

2000) with three groups of 5-year-old children (SLI = 24, resolved late talkers = 45, and typical language development = 32) from a large community sample. Their results supported previous findings (e.g., Archibald & Gatherole, 2006, 2007; Hick et al., 2005) that children with SLI had limited phonological working memory capacity. In a study by Archibald and Gatherole (2006b), they also found that children aged 7 to 11 years old performed poorly on both digit and word list recall with 60% of the children with SLI scored at least 1 standard deviation below the mean on digit recall and 70% below 1 standard deviation below the mean on word list recall.

Phonological Processing Skills

It has been documented that deficit in phonological processing is evident in children with dyslexia (Snowling, 1981, 2004). There is continuity between SLI and dyslexia as the deficit is also common in individuals with SLI (Kamhi & Catts, 1986). Past research has been done to analyze individuals with reading difficulties having problems in speech sounds production (i.e., phonological awareness).

Phonological awareness is the ability to compare, segment, and differentiate spoken words on the basis of their phonological structure. There is a huge body of research done on phonological awareness on preschoolers. Results found that phonological awareness predicts reading achievement even when general cognitive ability is controlled (Wagner, Torgesen, & Rashotte, 1994). Bishop and Snowling (2004) found that phonological awareness is severely impaired in individuals with dyslexia. Evidence has been documented that preschoolers' with SLI with and without later dyslexia (ages 4 and 6) have deficits in phonological awareness (Bishop, McDonald, Bird, & Hayiou-Thomas, 2009; Catts et al., 2005).

Empirical evidence had showed that phonological awareness is impaired in dyslexia and SLI with and without later dyslexia (Bishop, McDonald, Bird, & Hayiou-Thomas, 2009; Boets, et al., 2010; Catts et al., 2005). Additionally, a 3-year longitudinal study by Vandewalle, Boets, Ghesquiere, and Zink (2012) was conducted to compare the development of phonological skills in children with SLI with and without literacy delay. Results found that children with SLI with literacy delay scored lower than children with typical development in phonological awareness task until Grade3 and this is further supported and confirmed with other studies (Bishop, 2009; Catts et al., 2005).

Another literacy problem in children with SLI is speech production, a term called *expressive phonology impairment*. These children have difficulties and make frequent errors in words pronunciation and their speech is hard to comprehend. Previously, terms such as *functional articulation impairment*, *speech impairment* or *speech sound disorder* was used. Research showed that children with speech articulation difficulties will affect their reading attainment in kindergarten and that this will eventually determine their reading and spelling ability. It has been shown that children with SLI have problems in expressive phonology (Bishop & Snowling, 2004).

The above research showed that both SLI and dyslexia have a core deficit in phonological processing skills (i.e., phonological awareness). Recent findings proposed that these two disorders may have a closer relationship and can be concluded that they represent variants of the same developmental disorders (Catts et al., 2005). Hence, should SLI and dyslexia be treated as points on a continuum of severity or distinct developmental disorders? Is there a relationship between SLI and Dyslexia?

Relationship between SLI and Dyslexia

There has been documentation that SLI and dyslexia is overlapped (Catts, Adlof, Hogan, & Weismer, 2005; Kamhi & Catts, 1986). A recent study by Vandewalle, Boets, Ghesquiere, and Zink (2012) argued that SLI and dyslexia often co-exist with inconsistent data on the prevalence of comorbidity that range from 12.5% to 85%. Such big range of prevalence is still under study but it can be attributed to the different definitions and criteria used to diagnose SLI and dyslexia. Furthermore, participants' age and selection during the time of study could also be the explanation. Due to the comorbidity of these two disorders, children with SLI are at an increased risk to develop dyslexia (Vandewalle, Boets, Ghesquiere, & Zink, 2012). Researchers had been questioning whether SLI and dyslexia are distinct disorders or are they on a continuum.

A two-dimensional model of the relationship between dyslexia & specific language impairment was proposed by Bishop and Snowling (2004) in Figure 1 below. In this model, there are four quadrants (A, B, C, and D) with core deficits of phonological skills and non-phonological skills. In quadrant A of classic dyslexia, the model is portrayed as having a deficit in phonological skills without any problems in non-phonological skills. Whereas in the cases of classic SLI, both phonological and non-phonological skills are impaired that will eventually affect reading ability. Hence, this two-dimensional model depicts both disorders are not on a single continuum, but rather taking up different domains of a two-dimensional space.

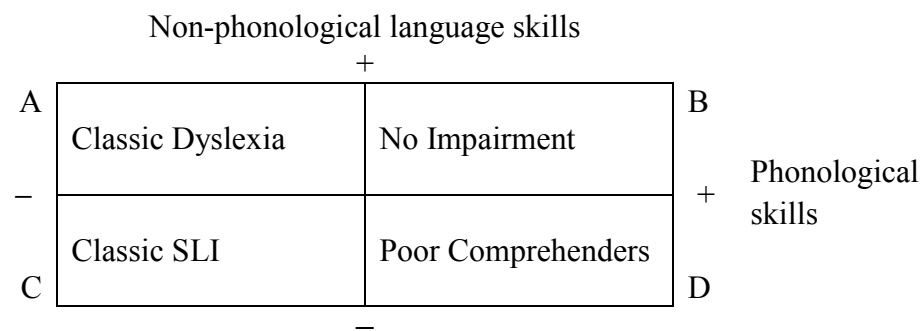


Figure 1. A two-dimensional model of the relationship between dyslexia & specific language impairment (SLI).

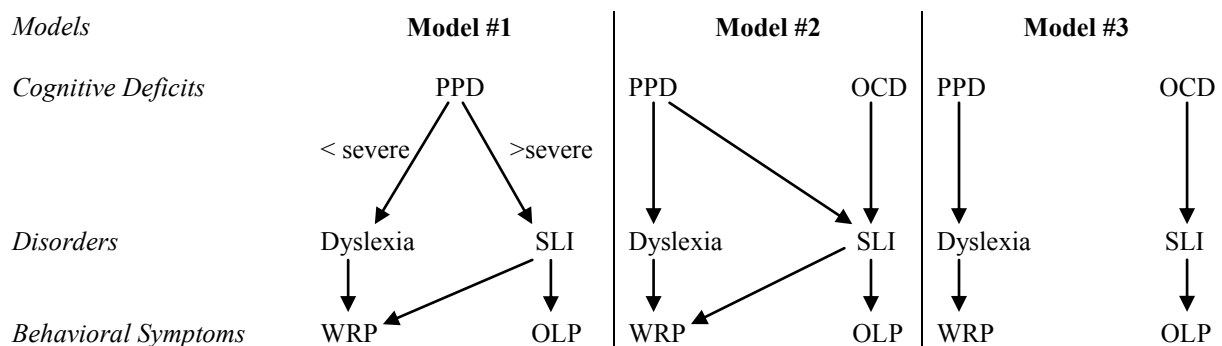
However, Catts, Adlof, Hogan, and Weismer (2005) proposed that there are three models depicting the relationships between SLI and dyslexia (refer Figure 2). All three models include a phonological processing deficit for both learning disorders. Manifestations of these disorders result on the severity of the deficits in phonological processing. In other words, children with SLI will exhibit difficulties in both reading and oral language if the deficit is severe. In contrast, they will show signs of dyslexia if they demonstrate word reading difficulties and show fewer problems in oral language.

In Model 1, SLI and dyslexia are not distinct disorder in that there is an overlap between them with both groups of children having problems in phonological processing and word reading. If Model 1 is correct, the overlap between SLI and dyslexia will be great with children with both disorders having problems in phonological processing skills and word

reading. Hence, this model suggested that SLI is a severe form of dyslexia which is caused by a more severe phonological processing deficit (Catts et al., 2005).

Model 2 showed that both learning disorders are distinct in that they are both characterized by a deficit in phonological processing that underlies word reading difficulties. The severity of the phonological processing deficit is shared between the two disorders with additional cognitive deficits in SLI which finally cause word reading and oral language problems. This model is also proposed by Bishop and Snowling (2004) in that SLI and dyslexia both share phonological processing deficits and word reading but SLI is observed to exhibit significant oral language problems while dyslexia is not. Rather than calling these children with SLI only, they referred them as *poor comprehenders* who have deficits in oral language (production and/or comprehension) but possessed normal phonological processing skills.

In the third model, both dyslexia and SLI are distinct developmental disorders with a core deficit in phonological processing in dyslexia, causing word reading problems in the end. The oral language difficulties are caused by SLI is the result of other cognitive deficits. Though this model depicts that both disorders are distinct developmental orders, the overlap is due to comorbidity in that they are associated and sometimes happen together in the same individual (Catts et al., 2005).



Note: OCD=Other Cognitive Deficits; OLP=Other Language Problems; PPD=Phonological Processing Deficit; SLI=Specific Language Impairment; WRP=Word Reading Problems

Figure 2. Models of the Relationship between Specific Language Impairment (SLI) & Dyslexia (Catts, Adlof, Hogan, & Weismer, 2005)

One of the studies done by Catts et al. (2005) is to examine the overlap between SLI and dyslexia. A limited but statistical significance overlap was found for these two disorders. This suggests that most children with SLI did not have dyslexia during kindergarten. Thus models 1 and 2 were not supported as there was no considerable overlap found between SLI and dyslexia. Rather, results are more consistent with Model 3 with most children having either SLI or dyslexia, or both disorders. In conclusion, the findings support the view that SLI and dyslexia are two distinct developmental disorders with SLI having problems in oral language with deficits in semantics, syntax, and/or discourse processing while dyslexia is a developmental language disorder with phonological processing and word reading problems. Though both disorders are distinct from this study, co-morbidity may surface in some children. Results from Catts et al. (2005) found that there were about two times more children having both disorders.

Conclusion

Unlike learning disorders like autism, Down syndrome, and dyslexia, *Specific Language Impairment* (SLI) is a developmental language disorder that is seldom heard of in Singapore. Language is a complex function that is greatly dependent on multiple underlying skills. As SLI is difficult to diagnose and identified, there may be possible case of misdiagnosis and/or under diagnosis for such children who are at risk with this disorder. It is hoped that this paper will provide parents, special education teachers, allied educators, and the public a preview on the definition, characteristics, prevalence, and some prior studies on SLI to support and help children who are at risk or suspected with SLI so as to help them better by providing them early intervention services. With permission granted by the authors (Chia & Poh, 2009), an informal checklist is also attached in this paper to help parents and educators to identify children suspected with SLI so that professional help can be sought if a child shows possible traits of SLI.

References

- Archibald, L. M., & Gathercole, S. E. (2006). short-term and working memory in specific language impairment. *International Journal of Language & Communication Disorders, 41*, 675-693.
- Archibald, L. M., & Gathercole, S. E. (2007). The complexities of complex memory span: Storage and processing deficits in specific language impairment. *Journal of Memory and Language, 57*, 177-194.
- Archibald, L. M., & Joanisse, M. F. (2009). On the sensitivity and specificity of nonword repetition and sentence recall to language and memory impairments in children. *Journal of Speech, Language, and Hearing Research, 52*, 899-914.
- Baddeley, A. D. (2000). The episodic buffer. A new component of working memory. *Trends in Cognitive Science, 4*, 417-423.
- Boets, B., De Smedt, B., Cleuren, L., Vandewalle, E., Wouters, J., & Ghesquiere, P. (2010). Towards a further characterization of phonological and literacy problems in Dutch-speaking children with dyslexia. *British Journal of Developmental Psychology, 28*(1), 5-31.
- Botting, N., & Conti-Ramsden, G. (2001). Non-word repetition and language development in children with specific language impairment (SLI). *International Journal of Language & Communication Disorders, 36*, 421-432.
- Best, J. R., Miller, P. H. (2010). A developmental perspective on executive function. *Child Development, 81*, 1641-1660.
- Bishop, D. V. M. (2009). Specific language impairment as a language learning disability. *Child Language Teaching and Therapy, 25*(2), (pp. 163–165).

- Bishop, D. V. M., & Adams, C. V., & Norbury, C. F. (2006). Distinct genetic influences on grammar and phonological short-term memory deficits: evidence from 6-year-old twins. *Genes, Brain and Behavior*, 5(2), 158-169.
- Bishop, D. V. M., Bishop, S. J., Bright, P., James, C., Delaney, T., & Tallal, P. (1999). Different origin of auditory and phonological processing problems in children with language impairment: evidence from a twin study. *Journal of Speech, Language, and Hearing Research*, 42(1), 155-68.
- Bishop, D. V. M., McDonald, D., Bird, S., & Hayiou-Thomas, M. E. (2009). Children who read words accurately despite language impairment: who are they and how do they do it? *Child Development*, 80, 593-605.
- Bishop, D., & Snowling, M (2004). Developmental Dyslexia and Specific Language Impairment: Same or Different? *Psychological Bulletin*, 130 (6), 858-886.
- Briscoe, J., & Rankin, P. M. (2009). Exploration of a “double-jeopardy” hypothesis within working memory profiles for children with specific language impairment. *International Journal of Language & Communication Disorders*, 44, 236-250.
- Brizzolara, D., Gasperini, F., Pfanner, L., Cristofani, P., Casalini, C., & Chilosi, A. M. (2011). Long-term reading and spelling outcome in Italian adolescents with a history of specific language impairment. *Cortex*, 47, 955-973.
- Catts, H. W., Adlof, S. M., Hogan, T. P., & Weismer, S. E. (2005). Are specific language impairment and dyslexia distinct disorders? *Journal of Speech, Language, and Hearing Research*, 48, 1378-1396.
- Chia, N. K. H. (2012, October 5). *Identifying, understanding and teaching preschool children with specific language impairment*. Paper presented at the Ministry of Community Development, Youth & Sports (MCYS) Child Care Seminar 2012: Creative Collaborative Communities for Excellence, Expo-Gateway Singapore Hall 2, Singapore.
- Chia, N. K. H., & Poh, P. T. C. (2009). *Specific language impairment: Characteristics & classroom intervention*. In Chia, N. K. H., & Wong, M. E. (Eds.), *Series on Special Educational Needs in Mainstream Schools* (Paper No.1). Singapore: Pearson Education/Prentice-Hall.
- Chia, N. K. H., Yap., E., & Ng, A. G. T. (2010, Spring/Summer). An analysis of verb pattern errors in active-passive sentence transformation made by upper primary Singaporean and Malaysian children with specific language impairment. *Journal of the American Academy of Special Education Professionals*, 96-141.
- Coady, J. A., & Evans, J. L. (2008). Uses and interpretations of non-word repetition tasks in children with and without specific language impairment (SLI). *International Journal of Language & Communication Disorders*, 43, 1-40.

- Conti-Ramsden, G., & Durkin, K. (2007). Phonological short-term memory, language and literacy: Developmental relationships in early adolescence in young people with SLI. *Journal of Child Psychology and Psychiatry*, 48, 147-156.
- Dockrell, J. E., & Lindsay, G. (2001). Children with specific speech and language difficulties: The teachers' perspective. *Oxford Review of Education*, 27(3), 369-394.
- Dodwell, K., & Bavin, E. L. (2008). Children with specific language impairment: An investigation of their narratives and memory. *International Journal of Language & Communication Disorders*, 43, 201-218.
- Fisher, S. E. (2005). Dissection of molecular mechanisms underlying speech and language disorders. *Applied Psycholinguistics*, 26, 111-128.
- Hick, R., Botting, N., Conti-Ramsden, G. (2005). Cognitive abilities in children with specific language impairment: consideration of visuo-spatial skills. *International Journal of Language and Communication Disorders*, 40, 137-149.
- Joanisse, M. F. (2004). Specific language impairment in children: Phonology, semantics and the English past tense. *Current Directions in Psychological Science*, 13(4), 156-160.
- Kamhi, A. G., Catts, H. W. (1986). Toward an understanding of developmental language and reading disorders. *Journal of Speech and Hearing Disorders*, 51, 337-347.
- Leonard, L.B. (2009). Some reflections on the study of children with specific language impairment. *Child Language Teaching and Therapy*, 25, 169-171.
- Levy, Y. (2003). Basic language skills in children with neuro-developmental disorders and the notion of brain plasticity. In Y. Levy & J. Schaeffer (eds.), *Language competence across populations: Toward a definition of specific language impairment* (pp. 353-382). Mahwah, NJ: Lawrence Erlbaum Associates.
- Lum, J. A. G., Conti-Ramsden, G., Page, D., & Ullman, M. T. (2011). Working, declarative and procedural memory in specific language impairment. *Cortex*. Advance online publication.
- Nickisch, A., & von Kries, R. (2009). Short-term memory (STM) constraints in children with specific language impairment (SLI): Are there differences between receptive and expressive SLI? *Journal of Speech, Language, and Hearing Research*, 52, 578-595.
- Petrucelli, N., Bavin, E. L., & Bretherton, L. (2012). Children with specific language impairment and resolved late talkers: Working memory profiles at 5 years. *Journal of Speech, Language, and Hearing Research*, 55, 1690-1703.
- Pierangelo, R., & Giuliani, G. (2007). EDM: *The educator's diagnostic manual of disabilities and disorders*. San Francisco, CA: John Wiley and Sons.
- Plante, E. (1998). Criteria for SLI. *Journal of Speech, Language and Hearing Research*, 41, 951-957.

- Reilly, S., Wake, M., Ukoumunne, O. C., Bavin, E. L., Prior, M., & Cini, E. (2010). Predicting language outcome at 4 years of age: Findings from Early Language in Victoria Study. *Pediatrics*, 126, e1530-e1537.
- Rice, M. L. (2000). Grammatical symptoms of specific language impairment. In D. V. M. Bishop & L. B. Leonard (eds). *Speech and Language Impairments in children: Causes, characteristics, intervention and outcome* (pp.17-34). East Sussex, UK: Psychology Press.
- Rice, M. L. (2002). A unified model of specific and general language delay: Grammatical tense as a clinical marker of unexpected variation. In Y. Levy & J. Schaeffer (eds). *Language competence across populations: Toward a definition of specific language impairment* (pp.63-95). Mahwah, NJ: Lawrence Erlbaum.
- Roos, E. M., & Ellis, Weismer, S. (2008). Language outcomes of late talking toddlers at preschool and beyond. *Perspectives on Language Learning and Education*, 15, 119-126.
- Rutter, M., Maughan, B. (2002). School effectiveness findings 1979.-2002. *Journal of School Psychology*, 40, 451-475.
- Schwartz, R. G. (2009). Specific language impairment. In R. G. Schwartz (Ed.), *Handbook of child language disorders* (pp. 3-43). NY: Psychology Press.
- Simpson, J., & Rice, M. L. (2002). Top 10 things you should know about children with specific language impairment to families. In the know-fact sheet. Retrieved from <http://www.merrill.ku.edu/>
- Snowling, M. J., (1981). Phonemic deficits in developmental dyslexia. *Psychological Research*, 43, 219-234.
- Stark, R. E., & Tallal, P. (1981). Selection of children with specific language deficits. *Journal of Speech and Hearing Disorders*, 46, 114-122.
- Tager-Flusberg, H., & Cooper, J. (1999). Present and future possibilities for defining a phenotype for specific language impairment. *Journal of Speech, Language, and Hearing Research*, 42, 1275-1278.
- Tallal, P., Ross, R., & Curtiss, S. (1989). Familial aggregation in specific language impairment. *Journal of Speech and Hearing Disorders*, 54, 167-173.
- Tomblin, J. B., Records, N. L., Buckwalter, P., Zhang, X., Smith, E., & O'Brien, M. (1997). Prevalence of specific language impairment in kindergarten children. *Journal of Speech and Hearing Research*, 40, 1245-60.
- Vandewalle, E., Boets, B., Ghesquiere, P., & Zink, I. (2012). Development of phonological processing skills in children with specific language impairment with and without literacy delay: A 3-year longitudinal study. *Journal of Speech and Hearing Research*, 55, 1053-1067.

Vargha-Khadem F., Gadian D., Copp A., & Mishkin, M. (2005). FOXP2 and the neuroanatomy of speech and language. *Nature Reviews Neuroscience*. 6,131–138.

About the author

Arnold Chee Keong CHUA, MEd (Special Education) candidature, BSc, is an early interventionist who is currently working with Kits4Kids Special School, Singapore.

Appendix A:

(Reproduced with the authors' permission)

Informal Checklist¹ for Early Childhood Educators/Preschool Teachers to identify Preschoolers at risk of having Specific Language Impairment (SLI)

NOTE: This is not a diagnostic assessment to identify young children for Specific Language Impairment (SLI). Early childhood educators or preschool teachers should recommend parents to seek professional help for their children suspected of having SLI. Professional advice and a formal standardized assessment should be sought from a speech language therapist or pathologist..

Instruction: Tick in the appropriate boxes for traits present, absent or not sure.

Traits of Specific Language Impairment (SLI)	Observation		
SECTION 1: Problems with Speaking & Speech Development	Present	Absent	Not Sure
1. Late to talk or show signs of speech delay when younger			
2. Unclear speech and others find it difficult to understand what is spoken			
3. Have trouble communicating with other children during play or group discussion			
4. Have poor and confusing intonation when making a statement or a request			
5. Have difficulty in pronouncing multisyllabic words accurately			
6. Peppering speech with verbal fillers (e.g., <i>ums</i> , <i>ers</i> , <i>whatevers</i>)			
7. Commit numerous grammatical errors when talking			
8. Jumble up words while trying to explain something to a listener and hence, make it difficult for the listener to follow			
9. Speak in short simple sentences			
10. Find it difficult to take turns in conversation with others			
11. Can be quite fixated on a specific topic during conversation			
12. Find it difficult to tell jokes			
Sub-total score (Number of ticks under the Present column)			
SECTION 2: Problems with Listening & Following Oral Instructions	Present	Absent	Not Sure
1. Have trouble following multiple-step verbal instructions or orders			
2. Tend to omit certain parts of verbal instructions, especially if there are several parts to the instructions			
3. Find it difficult to follow a conversation and/or to respond appropriately			
4. Have difficulty in understanding jokes			
5. Encounter difficulty in following the plot of a story in a movie or on TV			
6. Find it difficult to follow a happening that is described			
Sub-total score (Number of ticks under the Present column)			
SECTION 3: Other Problems with Language & Language Development	Present	Absent	Not Sure
1. Display problems in phonological processing, and hence, have reading and/or spelling difficulties			

¹ This informal checklist is adapted from Chia, N.K.H. & Poh, P.T.C. (2009). *Specific language impairment: Characteristics & classroom intervention*. Singapore: Pearson/Prentice Hall.

2. Encounter word-finding difficulties (i.e., finding the right word to say)			
3. Find it difficult to form <i>wh</i> -questions and/or trouble in focusing on the comprehension of these questions			
4. Tend to use a declarative sentence as an interrogative sentence when asking a question or making a request			
5. Have problems in transforming sentences from active to passive voice or vice versa			
6. Encounter difficulty in understanding sentences in passive voice			
7. Have difficulty in stringing words together to form proper sentences, active and/or passive			
8. Possess limited vocabulary or poor word knowledge			
9. Confuse with tense and aspect of verbs			
10. Have problems with the morphological structure of the past tense and past participle forms of regular and irregular verbs			
11. Confuse with subject-verb agreement (i.e., concord), where the subject can be either noun or pronoun			
12. Encounter difficulties using conjunctions to join sentences to form either compound or complex sentences			
Sub-total score (Number of ticks under the Present column)			
SECTION 4: Miscellaneous Others	Present	Absent	Not Sure
1. Manifest short-term verbal memory difficulties			
2. Have difficulty playing with small toys for pretend or imaginative play			
3. Encounter problems when playing word games (e.g., Scrabble)			
Sub-total score (Number of ticks under the Present column)			
SECTION 5: Co-existing Difficulties	Present	Absent	Not Sure
1. Dyslexia or specific reading disability			
2. Dysorthographia or specific spelling disability			
3. Autism spectrum disorder			
Sub-total score (Number of ticks under the Present column)			

How to score:

A child is at risk of SLI if the following scores are obtained:

For Section 1: At least 6 or more ticks under Present column

For Section 2: At least 3 or more ticks under Present column

For Section 3: At least 6 or more ticks under Present column

For Section 4 and Section 5: At least 3 or more ticks under Present column from both sections put together

Follow-up action:

Advise the parents to bring their child to seek professional advice and assessment from a qualified speech language therapist.

Helping Dyslexic Students to write: Process Writing Approach

Chiew Hong NG, PhD, MA (Appl. Linguistics), BA
National Institute of Education
Nanyang Technological University, Singapore

Abstract

This paper explores the use of process writing approach as an instructional method for teachers to help dyslexic students write. The author examines the writing difficulties faced by dyslexic students and discusses how both mainstream teachers and teachers specializing in teaching dyslexic students can help dyslexic students with their writing through the use of the process writing approach.

Key words: Dyslexic students, Writing difficulties, Teaching of writing, Process writing approach

Introduction

In recent years, teachers are enabled to help dyslexic students attending mainstream classes cope with reading and writing through courses. Teachers are informed of dyslexic students in their classes so that they can give these students special attention and extra help. There has been much interest in how to help dyslexic students read and write, especially those identified as at risk of academic failure. Though teachers are keen to help dyslexic students, they are constrained by the need to teach reading and writing to students of varying ability levels within the stated curriculum time frame. Though one-on-one tutoring to enhance dyslexic students' writing ability is ideal, this will be time consuming if a systematic approach to writing is not adopted. This paper explores the possibility of utilizing the process writing approach to enable teachers to help both non dyslexic and dyslexic students in their writing through encouraging generation of ideas of writing, facilitating some form of diagnosis of writing difficulties and offering differentiation in the help to be given to individual dyslexic students.

Background

Dyslexia, Dysgraphia and Writing

Dyslexia has been described by The British Dyslexia Association (n.d.) as "a combination of abilities and difficulties which affect the learning process in one or more of reading, spelling and writing. Accompanying weaknesses may be identified in areas of speed of processing, short term memory, sequencing, auditory and /or visual perception, spoken language and motor skills. It is particularly related to mastering and using written language, which may include alphabetic, numeric and musical notation" (para.15). According to the National Centre for Learning Disabilities Editorial Team (n.d.), dyslexia can affect people differently

depending upon the severity of the learning disability. Some with dyslexia can have trouble with reading and spelling, while others struggle to write, or to tell left from right. Some show few signs of difficulty with early reading and writing but later on may have trouble with complex language skills, such as grammar, reading comprehension, and more in-depth writing.

Dyslexia affects writing as much as reading. In Goodwin and Thomson's (2006) view, a student can be articulate and fluent verbally, demonstrating ability to understand concepts and ideas, and yet 'the writing may be disjointed, as if the very ideas have become muddled. The sequencing may be less clear, the vocabulary more restricted. The spelling of individual words may show letter reversals or additions, while some words may be missing all together' (p. 60). Goodwin and Thomson (2006) even identify characteristics of handwriting and writing that may suggest dyslexia as:

- Use of Upper-Case exclusively or randomly.
- Letters back to front.
- Irregular size or awkward shape of writing, poor spacing. Random or non-existent punctuation.
- Missing letters or words.
- Spelling errors: the same word spelt in different ways, letters in the wrong order, phonic approximations, omission of syllables, errors in suffixes.
- Use of similar but wrong words – malapropisms.
- Non-standard sentence structure, an impression of inexperience in writing.
- Misinterpretation of questions (p.7)

There is a specific term for written dyslexia - *dysgraphia* - which is a learning disability resulting from the difficulty in expressing thoughts in writing and graphing. It generally refers to extremely poor handwriting (Creative Mind Academy). According to the DSM-IV (APA, 2000), dysgraphia, known as a "Disorder of Written Expression," is a combination of excessively poor handwriting, multiple spelling errors, grammatical and/or punctuation errors within sentences and poor paragraph organization (Silbert & Silbert, 2012).

Students with dysgraphia often have difficulty with the sequence of letters and words as they write due to sequential/rational information processing which lead to perceptual problems (reversing letters/numbers, writing words backwards, writing letters out of order, and very sloppy handwriting). They could experiences extreme difficulty with the "mechanics" of writing (spelling, punctuation, etc.) and they tend to intermix letters and numbers in formulas (Creative Mind Academy, n.d.).

With dysgraphia, Stracher (2000) suggests that writing problems manifest themselves in three stages which include motor factors relating to legibility, spelling difficulties and organising writing and syntactic structures.

Dyslexia and Writing Challenges

In looking at students' essays, it can be argued that the characteristics of dyslexic students' written work might equally be found in the work of a non-dyslexic student: difficulty with spelling, handwriting, grammar, syntax and choosing words they can spell rather than those they want to use. Non-dyslexic students who have reading difficulties will also find written

tasks are laborious. Still, specific to dyslexic students, Richards has summarized the primary reasons for avoidance of writing as one or more of the following:

- They have a hard time getting started and feel overwhelmed by the task.
- They need to concentrate to form letters: it is not an automatic process.
- They struggle to organize and use mechanics of writing.
- They are slow and inefficient in retrieving the right word(s) to express an idea.
- They struggle to develop their ideas fluently (poor ideation).
- They struggle to keep track of their thoughts while also getting them down on paper.
- They feel that the process of writing on paper is slow and tedious.
- They feel that the paper never turns out the way they want.
- They realize that the paper is still sloppy even though substantial time and effort were spent.
- They are dysgraphic, which causes multiple struggles at the basic processing levels.
- They are dyslexic, which causes very poor spelling and interferes with automatic use of writing mechanics.

If good writing is characterized by accepted standards of punctuation, capitalization and spelling; choice of appropriate vocabulary; use of correct grammar and writing in a way that expresses ideas, opinions and thoughts in a creative and mature way (Silbert & Silbert, 2012), these are considered as writing challenges by dyslexic students.

For dyslexic students, besides the issue of handwriting - letters may be not joined up, use of upper-case letters, very untidy handwriting, with uneven spacing or letters of unequal size - they find writing simple sentences a challenge as they are often hampered by problems with basic spelling and grammar. Dyslexics spend a long time trying to get the spelling right and they have a tendency to use the words they feel they can spell, rather than the vocabulary they know; add or omit words, or modify the meaning of words or sentences by imposing their own idiosyncratic spelling pattern (Edinburgh Napier University, 2012). They write incomplete sentences, put too many ideas in one sentence, show inability to select between less and more important points and use random punctuation (Goodwin & Thomson, 2006).

Dyslexics find that long pieces of written work are hard to organise and structure. They have problems with expression, grammar, sentence structure, spelling, punctuation, sequencing and getting started. When tackling written assignments, one of the most difficult things for a dyslexic is getting their initial thoughts down on paper (Edinburgh Napier University, 2012). Though they have all the ideas in their head and know exactly what they want to say, they struggle with expressing their ideas.

Additionally, their short-term working memory deficit and slow information processing speed add to the complexity of dealing with words. The work produced by a dyslexic individual is often at odds with their verbal ability in class; the two do not match up. (Edinburgh Napier University, 2012).

One useful approach to help dyslexic students in overcoming the various problems with writing is the use of process writing model.

Process Writing Approach

Seow (2002) construes process writing as a programme of instruction which provides students with a series of planned learning experiences to help students understand the nature of the writing process. Process writing as ‘a classroom activity incorporates the four basic writing stages – planning, drafting (writing), revising (redrafting) and editing and three other stages externally imposed on students by the teacher, namely, responding (sharing), evaluating and post writing’ (Seow, 2002, p. 316).

In the planning stage, students are encouraged to write through activities designed to stimulate thoughts and generate ideas such as brainstorming, semantic mapping, clustering and rapid free writing (Seow, 2002). Once students have gathered sufficient ideas, they make a first attempt at writing the first draft. At this drafting stage, the writers “focus on the fluency of writing and are not preoccupied with grammatical accuracy or the neatness of the draft” (Seow, 2002, p. 317).

Between drafting and revising will be the externally imposed stage of responding which can take the form of a teacher’s quick initial reactions to students’ drafts either orally or in writing or a response from peer either in pairs or in small groups. There is to be no evaluation of the writing but the teacher and peer will offer suggestions and questions to help improve the writing.

Students will then embark on the revising stage of the process writing. When students revise, they review their writing based on the feedback offered by the teacher or peer in the responding stage. In revising, they check how effectively they have communicated their meanings to readers and in the process improve the content and organization of ideas. The students can then write an improved second draft for the editing stage of the writing process.

Goodwin and Thomson (2006) offer this useful summary of the tasks and objectives for the drafting stages (p. 32):

Stage	Tasks	Objectives
Before drafting	Gather all <i>relevant</i> information (index cards, notes etc.).	Getting ideas
	Produce an overview of all topics required (e.g. spider plan, mindmap, list).	Selecting words
	Group ideas and topics together (e.g. using coloured highlighters).	Basic paragraph Structure
Drafting	Take each topic separately. Write a list of relevant points, using short sentences.	Basic sentences
Discuss draft	Read and discuss with your tutor or another student, for <i>content</i> and. Mark structure comments in pencil.	Content and <i>structure</i>
Second draft	Make second draft, incorporating comments.	Content, structure and grammar

In the editing stage, students will find and correct problems with grammar, style, word choice and usage, and punctuation.

The last two stages involve the teacher evaluating the students' writing and conducting the post writing which "constitutes any classroom activity that the teacher and students can do with the completed pieces of writing" (Seow, 1999, p. 319).

According to Graham and Perin (2007a, 2007b), exceptional writing teachers set up a predictable writing routine where students are expected to plan, draft, revise, edit, and share what they write or they treat writing as a process and they expect students to engage in the same processes as skilled writers.

Applying the Process Writing Approach to help Dyslexic Students

Since the process writing approach helps students in enhancing their writing skills, mainstream teachers can apply the following steps for the various stages of process writing (drawn from Department for Education and Skills (2004); Edinburgh Napier University (2012); Goodwin & Thomson (2006); National Centre for Learning Disabilities Editorial Team (n.d.); Richards (1999); Silbert & Silbert (2012); University of Leicester (n.d.)) to help both non dyslexic and dyslexic students in the writing process. Using the process writing model allows for differentiation and timely feedback to meet the specific needs of dyslexic students at the various stages.

Both Richards (1999) and Creative Mind Academy (n.d.) advocate separating the writing into stages and then teaching students the stages of the writing process (brainstorming, drafting, editing, and proofreading, etc.). Creative Mind Academy (n.d.) even suggests grading these stages even on some 'one-sitting' written exercises, so that points are awarded on a short essay for brainstorming and a rough draft, as well as the final product. POWER acronym has been suggested by Richards (1999) and Creative Mind Academy (n.d.) to represent the process writing approach:

- **P** - plan your paper (step 1)
- **O** - organize your thoughts and ideas (steps 2 and 3)
- **W** - write your draft (step 4)
- **E** - edit your work (steps 5, 6, and 7)
- **R** - revise your work, producing a final draft (step 8)

Planning stage:

- Since one of the most difficult things for a dyslexic is getting their initial thoughts down on paper or getting started as they struggle with expressing their ideas, in terms of the planning stage, teachers are to encourage students to outline their thoughts to get the main ideas down on paper without having to struggle with the details of spelling, punctuation (Richards, 1999). To free writers to compose without constraint, use taperecorders, computers, writing frames and other scaffolding techniques (Department for Education and Skills, 2004, p. 17)
- Have the students use visual graphic organizers such as a mind map where that the main idea is placed in a circle in the center of the page and supporting facts are written on lines coming out of the main circle, similar to the arms of a spider or spokes on a wheel. (Richards, 1999)
- Have students write just one key word or phrase for each paragraph, and then going back later to fill in the details as part of planning. (Creative Mind Academy, n.d.)

Drafting stage:

- Tell students to write the first draft where the focus should be on getting their ideas on paper. They are not to worry about making spelling or grammar errors.
- Look at examples of essays and break them down into their different parts (introduction, main body, and conclusion). Teach students to use these structures for their essay.
- Teach students to divide ideas into small sections and to develop topic sentences to put at the head of each section (Goodwin & Thomson, 2006).
- Teach students to write short numbered sentences to begin with, each covering one point. Teach students to add further examples and illustrations of the point he/she is making. Ideas can be joined by using link words such as ‘and’, ‘but’, ‘however’.

Editing stage:

- Encourage proofreading three times: once for content and organisation; once for grammar, expression, sentence structure, etc.; and once for spelling. Proofread each other's work but ensure that there is no risk of humiliation (Department for Education and Skills, 2004, p. 17).
- Teachers can use Goodwin and Thomson's (2006) list of characteristics of handwriting and writing to diagnose dyslexic students' specific writing problems and address them in individual conferencing.
- Help students create a checklist for editing work — proper spelling, neatness, grammar, syntax, clear progression of ideas, etc
- Teach learners how to edit their work. Though punctuation and capitalization problems can be very difficult to improve, teach self-monitoring for accuracy on this dimension. Minimize penalties for these errors (Department of Social Services, n.d.).
- Since spelling is one of the key areas where dyslexics have most difficulty and not every dyslexic produces the same type or pattern of spelling errors because of their management of phonetic sequencing and the degree of their dyslexic difficulty (Edinburgh Napier University), teachers can analyse the types and patterns of spelling errors and remind dyslexic students to edit for the spelling errors they have a tendency to make.
- Develop skills in use of spell checking. Develop a list of particularly troublesome words, especially those that are frequently used. Focus on distinctions that spell checkers miss, e.g., heterographic homophones, like “hear-here,” “there-their,” “whether-weather,” etc (Department of Social Services, n.d.).
- Encourage the student to utilise a rich vocabulary over one that is easily spelled. Have the student mark words that can be replaced with better alternatives, then, help the student ensure that the spelling of those new words is accurate.

Evaluating stage – feedback:

- Provide clear, constructive feedback on the quality of work, explaining both the strengths and weaknesses of the essay and commenting on the structure as well as the information that is included (National Centre for Learning Disabilities Editorial Team, n.d.).
- Let students understand why they have gained or lost marks and if spelling, punctuation and grammar are considered an essential part of the brief, it is important to let them know this in advance (University of Leicester, n.d.).

- Give prompt, legible and detailed feedback as dyslexic students need encouragement on what they have achieved and explicit information about how they can improve their work (University of Leicester).
- Identify the type (what kinds) of errors that have been made in the work, particularly and deal with them in remedial sessions.

Conclusion

This paper has examined the challenges in writing faced by dyslexic students and has offered the possibility of using the process writing approach to help both mainstream teachers and teachers specialising in the teaching of dyslexic students to understand the nature of the writing process. In using the process writing model as a classroom teaching activity, teachers can diagnose the writing problems and offer individualized help to dyslexic students through the various stages of the writing process: generating of ideas to overcome the problem dyslexic students have in starting the writing process; encouraging students to write the first draft by focusing on fluency of writing without being constrained by spelling, grammar and punctuation problems; responding to students' writing by giving suggestions on how to improve content and organisation of ideas and offering help for spelling, punctuation, grammar and syntax in the editing stage.

References

- Creative Mind Academy (n.d.). *Dysgraphia*. Retrieved from:
www.creativemindacademy.org/upload/DYSGRAPHIA.pdf.
- British Dyslexia Association (n.d.). *Dyslexia research information*. Retrieved from:
<http://webcache.googleusercontent.com/search?q=cache:qh3nqbuMsZgJ:www.bdadyslexia.org.uk/about-dyslexia/further-information/dyslexia-research-information-.html+&cd=1&hl=en&ct=clnk&gl=sg>
- Department for Education and Skills (2004). *A framework for understanding dyslexia*. London, UK: NIACE
- Department of Social Services (n.d.). *A quick guide to working with students with dysgraphia*. Retrieved from:
<http://webcache.googleusercontent.com/search?q=cache:cDyI8xOWLGgJ:www.plu.edu/dss/widgets/documents-forms/items/resources-for-faculty/A-Quick-Guide-to-Working-with-Students-With-Dysgraphia.doc+&cd=1&hl=en&ct=clnk&gl=sg>
- Edinburgh Napier University (2012). *Dyslexic university student*. Retrieved from:
http://staff.napier.ac.uk/services/sas/Student%20Wellbeing/disability/support_info_staff/learning_difficulties/Pages/dyslexic_student_writing_difficulties.aspx
- Goodwin,V and Thomson, B. (2006). *Dyslexia toolkit: A resource for students and their tutors*. Walton Hall, Milton Keynes: The Open University Press.

- Graham, S., & Perin, D. (2007a). *Writing next: Effective strategies to improve writing of adolescents in middle and high schools— A report to the Carnegie Corporation of New York*. Washington, DC: Alliance for Excellence in Education.
- Graham, S., & Perin, D. (2007b). What we know, what we still need to know: Teaching adolescents to write. *Scientific Studies in Reading*, 11, 313–336.
- National Centre for Learning Disabilities Editorial Team (n.d.). *What is dysgraphia?* Retrieved from:
<http://webcache.googleusercontent.com/search?q=cache:cmCTTn1ysD8J:www.ncld.org/types-learning-disabilities/dysgraphia/what-is-dysgraphia+&cd=1&hl=en&ct=clnk&gl=sg>
- Richards, R. G. (2004). *Understanding why students avoid writing*. Riverside, RET Center Press, www.retctrpress.com. Retrieved from: http://www.dyslexia-ncbida.org/articles/sept04/why_students_avoid_writing.html
- Richards, R. G. (1999) *Strategies for dealing with dysgraphia*. Retrieved from: <http://www.ldonline.org/article/5890/>
- Seow, A. (2002). The writing process and process writing. In J. C. Richards & W. Renandya, W. (Eds.). (2002). *Methodology in language teaching: An asnthology of current practice*. (pp. 315-328). Cambridge, UK: Cambridge University.
- Silbert , L, & Silbert, A. J. (2012). *Dysgraphia toolkit: How singing, playing games and other fun activities can help defeat writing disabilities*. Retrieved from: <http://www.stronglearning.com/>.
- Stracher, D. A. (2000). *Dysgraphia in the International Dyslexia Association*. Houston, TX: Houston Branch Resource Directory.
- University of Leicester (n.d.). *How does dyslexia impact on the writing process?* Retrieved from:
<http://www2.le.ac.uk/offices/ssds/accessability/staff/accessabilitytutors/information-for-accessability-tutors/how-does-dyslexia-impact-on-the-writing-process-and-how-does-the-assessed-work-cover-sheet-work>

About the Author

Dr Chiew Hong NG is a lecturer with the English Language and Literature Academic Group at the National Institute of Education, Nanyang Technological University, Singapore. She teaches pedagogical courses for pre-service and in-service teacher education.

Children who are Deprived Readers: From being Disadvantaged to becoming Disabled

Noel Kok Hwee CHIA, EdD, BCET, BCSE, FCoT, FCP, FCollP
Assistant Professor, Early Childhood & Special Needs Education
National Institute of Education, Singapore

Abstract

This short paper provides a brief but insightful understanding of who the deprived readers are. The author began by defining the term “deprived” and then related it to that of being a deprived reader. Then he went on to focus on who the deprived reader is by defining him/her as one who is being disadvantaged by unmet needs and can end up becoming disabled. This means that a deprived reader can be disadvantaged and disabled to a certain extent at the same time or can regress from being disadvantaged to becoming eventually disabled. Finally, the author returned to his comprehensive model of reader profiles that was first introduced in 1994 and refined it in 1998 and 1999 to show where the deprived readers should be categorized so that with better understanding, parents and teachers are better informed to know how they can provide appropriate help to them.

Keywords: Deprived Reader, Disabled Reader, Disadvantaged Reader, Reader Profile

Introduction

Literacy¹ rate in Singapore has been on the rise since 1980. For instance, the total youth literacy rate among Singaporeans aged between 15 and 24 years old has moved up from 96.29% in 1980 to 99.78% in 2009. For Singaporean female youths, the literacy rate moved up from 96.16% in 1980 to 99.84% in 2009, while for Singaporean male youths, it moved up from 96.41% in 1980 to 99.73% in 2009 (IndexMundi, 2013).

In fact, Singapore has been ranked amongst the top 100 countries with a high literacy level attained by her people. Apparently, it seems Singapore has performed so well that the number of illiterate Singaporeans has become negligible. However, having a negligible number of illiterate does not mean we do not have illiterates among us. No matter how small this number may be, these illiterates still exist. They need to be helped to become better informed of the daily events that are happening in our society as well as the world at large.

Moreover, having a high literacy rate does not mean we do not have other challenging issues relevant or related to literacy. With a reported increase in the number of children with learning disabilities such as reading-related difficulties or dyslexia being identified or diagnosed, we need to look into this group of readers with learning challenges.

¹ Literacy is referred to the ability to read and write in this paper.

There are also other areas of literacy that are equally important to ensure our literacy rate is not just a mere impressive quantity but also of a good quality. One particular group that this paper will cover concerns the deprived readers.

Who are the Deprived Readers?

To understand the concept of deprived readers, and in this paper, our focus is on children, we need to understand the term *deprived*. According to Rees (1968), a child is called “deprived because as he grows up he lacks what most people would consider essentials for living and for learning” (p.35). Basing on this explanation of *deprived*, it brings us to the hierarchy of needs, which Maslow (1943, 1965) has identified as following: basic needs, safety needs, psychological needs, esteem needs and aesthetic needs. Anyone deprived of these needs (especially the basic, safety and psychological needs) could never function normally, not to mention even about learning to read or reading to learn. The focus is on the fact that though the child is deprived, he is still a human person and should be respected as such (Rees, 1968).

Being deprived is more than just being expropriated of the essential needs as listed in Maslow’s hierarchy of needs. When we relate it to reading, a deprived reader is seen as one who is expropriated in many ways such as time constraint, information overload, other distractions (e.g., cyber-gaming and surfing the Internet) and commitments (e.g., co-curricular activities) that take his or her attention and time away from the reading activity.

There are two ways to look at deprived readers in order to understand them and note the difference between the two groups. On the one hand, deprived readers can be seen as being disadvantaged by their situational circumstances and hence, in the long run, they can become disabled. For example, a child born in a dysfunctional family where parents are absent most of the time or never develop the habit of reading even newspaper will be deprived of a good role model. On the other hand, deprivation can be seen as a form of adaptation or compensation for such readers. For instance, a time-deprived reader will scan through the morning newspaper to get a gist of the current affairs. This is a way the reader adapts his reading or compensates for the lack of time to read at his leisure time. Such a time-deprived reader is known as a scanner. The former is known as situational or circumstantial deprived readers while the latter is known as compensatory or adaptive deprived readers.

In summary, a deprived reader can be defined as one who is being disadvantaged by unmet needs (e.g., living in a remote place where print is totally lacking) and can end up becoming disabled (e.g., illiterate or inability to recognise letters/words at all because deprived of early exposure to print). This means that the deprived reader can be disadvantaged and disabled simultaneously to a certain extent or he or she can regress from being disadvantaged to becoming eventually disabled. Figure 1 illustrates the three sub-categories of deprived readers:

1. A deprived reader can be one who is being disadvantaged by unmet needs. For example, a child who never has a good role model to imitate so that he/she can develop good reading habits. Such an individual can be either a situational/circumstantial deprived reader or compensatory/adaptive deprived reader.
2. A deprived reader can be disabled as a result of being disadvantaged over a long period of time. One good example is the feral children, who have lived isolated from human contact from a very young age with no or little experience of human care, loving or social behavior, and crucially, of human language. Such children are often abandoned or

rejected by their parents and they grow up to manifest serious learning and behavior challenges. Although rare in today's modern society, a child with absent parents who has never been enrolled in a school before and now has grown up into a young adult can be identified as one such situational/circumstantial deprived reader.

3. A deprived reader can be disadvantaged and disabled at the same time. For example, an orphan living in a country with a long-term civil unrest and without the opportunity to attend school may compensate or adapt to read his or her immediate situation in order to survive the daily challenges encountered. He is one such compensatory/adaptive deprived reader in this third category.

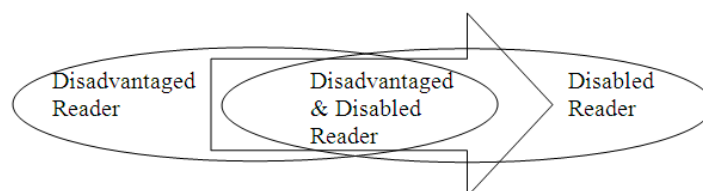


Figure 1. Three Sub-categories of Deprived Readers

There is a further step to be taken to understand more about deprived readers. We need to examine these two following aspects: literacy aptitude and literacy attitude. In the next section, two questions are posed relating to these two aspects. In the final section, we re-look into the model of reader profiles first proposed by Chia (1994, 1998, 1999) to explore briefly how deprived readers are being categorized within the framework.

Two Key Questions

There is certainly a need for us to look at our children who are identified and defined as deprived readers in two key areas: firstly, we need to know in terms of their aptitude, i.e., how well they are performing in literacy, and, secondly, we need to know in terms of their attitude, i.e., what their views and/or behaviors are towards literacy. With these two areas in mind, we ask ourselves the following two key questions:

The first question is: Why are they are not performing well in literacy? Or are they being deprived of something that has caused them to perform below the expectation of what they can do?

The second question is: What are their perspectives on literacy? Or have they developed negative concepts or misconceptions about literacy such that they are not performing to the expectation of what they can do?

The First Question: Aptitude

To answer the first question, we need to probe those individuals who are not avid readers because they are, for instance, distracted by other more exciting new media that are digital, easily accessible, compressible and interactive (e.g., the CD-ROMS, computer multimedia, DVDs, Internet, video games, and websites). This means that printed books and newspapers/magazines are no longer the main source of information nor are they attractive enough to hold the readers' attention.

While our literacy rate has improved over the past decade, our main concern can be expressed in terms of the following question: Does it mean our quality in terms of our literacy aptitude or performance in literacy has also improved, too? This can be seen from two perspectives expressed in form of two questions: First, have we improved our teaching (or literacy instruction in schools) to raise the quality of literacy performance among our students? Second, is our students' quality of literacy performance affected by the quality of books or other printed materials they are reading today?

It is not easy to answer the two questions unless a task force is set up to investigate. More questions will be asked to answer this main question of literacy aptitude. For instance, is it possible that there is a mismatch between literacy instruction and students' literacy needs? A typical requirement is to take into consideration the developmental and personal differences between students in terms of their literacy performance. It is also important to keep in mind that our students today are expected to read more difficult or complex materials without instruction on strategic or critical reading. Hence, our struggling readers will feel that they can never make progress as readers or perceived themselves as being inadequate to cope with difficult reading tasks. Having a sense of feeling inadequate as a reader is a form of feeling like a deprived reader to perform satisfactorily. In another instance, how do we reconcile literacy as promoted in schools with literacy students will engage outside their schools? We need to consider the literacy as promoted in the national curriculum to meet the required proficiency that our students have to demonstrate outside their schools (or classroom context). Depending on the kind of readers we are talking about, readers of different cognitive abilities perceive different reasons for school-based literacy and outside-of-school literacy expectations. I shall discuss more about the different reader profiles in the later part of this paper.

In a typical classroom situation, students are required to be able to read and comprehend passages by answering questions that come with such printed texts and/or also expected to be able to compose and write down their stories based on a certain theme given or some guided pictures. In the outside-of-school situation, it is very different. For example, one needs to be able to read a menu to order food or to read a signpost to get to a specific location and so on. In another example, writing the address on an envelope to post a letter is a functional process of literacy. This suggests the need for literacy taught in school to be applied in daily use. A failure to do so may result in producing deprived readers (or deprived writers).

The Second Question: Attitude

To answer the second question, we need to understand the low or poor attitude towards literacy among our students identified as deprived readers. This may involve directly and/or indirectly both parents and teachers. We can look at this question in terms of first, the parental involvement and home environment, and second, teacher involvement and school environment. These two factors play an influential impact on the literacy attitude of our students.

To ensure that our children grow up to become better readers and writers (or simply, literates), such a heavy responsibility should not be solely the teachers', but should also include the parents' involvement. Parents, who read and/or write, set as a good role model for their children to imitate. According to the New Jersey Middle Grade Literacy Task Force (2004), such responsibility on promoting positive literacy attitude among our children should include "good written information exchange between school and parents; parental

involvement in policy and curricular decisions; and easy access for parents to administrators and teachers” (p.8). To ensure the success of such an exercise, the degree of home-school cooperation is of upmost importance in order to work towards positive school achievement. Currently, there is no clear indication whether parent-school cooperation produces significant positive literacy attitude (Juvonen et al., 2004; Marzano, 2000). More studies will be needed to examine this issue of research interest.

Home environment is as important as the school environment if we hope our students develop a positive attitude towards literacy. Current literature has reported the importance of home environmental factors, such as parental support, socio-economic status, parents’ educational levels and types of occupation, and home atmosphere, that play a big role in promoting students’ positive attitude towards literacy and hence, better student achievement in school (Marzano, 2000). This suggests that we may need to examine the various risk factors at home that may impact negatively on student attitude towards literacy and to look for ways to promote protective factors in order to build positive literacy attitude. Where risk factors are higher and protective factors are lower, situational/circumstantial deprived readers will result.

There are two possible ways to deal with the issue of low literacy attitude among deprived readers, especially those who are situational/circumstantial deprived. Firstly, we need to identify students coming from low-income families and provide assistance that can help to lower the risk factor of developing poor attitude towards literacy and hence, literacy failure in the long run. This can be achieved through better home-school collaborative efforts to close the literacy achievement gap. Parent volunteers have been tapped on to help out in school-based buddy reading programmes and this is one good example of parent-school cooperation. Secondly, non-government or voluntary welfare organizations can also play a part to build positive literacy attitude among children and youths. In Singapore, the kidzREAD programme introduced by the National Library Board (Sreedharan, 2012) is one good example of the national effort to help reduce such a risk factor. Other voluntary self-help groups such as CDAC, Eurasian Association, Mendaki and SINDA have also come into picture organizing or providing activities to promote positive literacy attitude among children and youths from low-income families. The Society for Reading and Literacy, for example, has organized its Reading Rocks programme for such children (see the paper by Elangovan, 2013, in this issue, for more detail).

A New Model of Reader Profiles to include Deprived Readers

It is time for educators, librarians, researchers and other parties interested in literacy studies as well as its development to look into a new set of reader profiles. Chia (1994, 1998, 1999) once proposed four main categories of reader profiles, which are briefly described here:

- (1) The independent readers: They can read and do read. They can be further categorized into three subgroups: good readers, effective readers, and mature readers.
- (2) The reluctant or unmotivated readers: They can read but do not read. They can be further categorized into two subgroups: slow readers and poor readers.
- (3) The disabled readers: They can read but with difficulty in decoding, comprehending or both. They can be further categorized into two subgroups: general backward readers and specific retarded readers (now known as specific challenged readers in order to sound more

politically acceptable). The former refers to those whose reading disabilities occur in the context of overall poor performance (Rutter & Yule, 1975). Those with mental challenges fall under this category (Alexander, 1992). The latter refers to those with a disability specifically in reading (e.g., one who is intellectually able but shows poor or low performance in reading). Chia (1999) has divided this latter group into three types of specific challenged readers: poor decoder, poor comprehender, and poor comprehender-decoder/poor decoder-comprehender (used interchangeably).

(4) The illiterates: They are unable to read. They can be further categorized into two subgroups: functional illiterates and reading illiterates. The former refers to “those who cannot read or write sufficiently well to function effectively in all those activities in which literacy is normally assumed in their culture or group” (Chia, 1999, p.71). However, it does not mean they cannot sign their names or read street signs. The latter refers to one who is unable to understand and use those written language forms required by society and/or valued by an individual (Chia, 1994).

Where do we place the deprived readers within this framework? To do so, let us summarize who deprived readers are basing on what we have already discussed above.

The deprived readers: They can read and do read but are unable to read everything due to the current constraints they are facing. Hence, they have to resort to scanning for essential information or to get a gist of the message which they may or may not be rightly interpreted or comprehended.

The best place to position them will be among the independent readers (those who can read and do read), the reluctant readers (those who can read but do not read) and the disabled readers (those who can read but with difficulty). The illiterates fall outside the framework as they do not read because they cannot read. Figure 2 below provides the illustration for easy understanding.

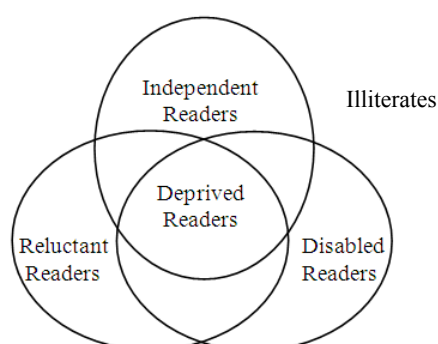


Figure 2. A New Categorization for the Model of the Reader Profiles

References

- Alexander, G. (1992). The mentally disabled. In H. Anuar (Ed.), *Coping with your child's reading disability* (pp.29-33). Singapore: National Book Development Council of Singapore.
- Chia, N.K.H. (1994). Profiles of readers. *The Singapore Professional*, 18(2), 26-31.

- Chia, N.K.H. (1998). Chia, N.K.H. (1998). A model of reader profiles. *Education Today*, 48(2), 14-19.
- Chia, N.K.H. (1999). A comprehensive model of reader profiles. *Teaching and Learning*, 19(2), 64-72.
- Elangovan, S. (2013). Narrative storytelling to facilitate early literacy skills of preschoolers from low socio-economic status. *Journal of Reading and Literacy*, 5, 23-38.
- IndexMundi (2013). *Literacy in Singapore*. Retrieved from:
<http://www.indexmundi.com/facts/singapore/literacy-rate>.
- Juvonen, J., Le, V., Kaganoff, T., Augustine, C., & Constant, L. (2004). *Focus on the wonder years: Challenges facing the American middle school*. Arlington, VA: RAND Corporation.
- Marzano, R.J. (2000). *A new era of school reform: Going where the research takes us*. Aurora, CO: Mid-continent Research for Education and Learning.
- Maslow, A.H. (1943). A theory of human motivation. *Psychological Review*, 50(4), 370-396.
- Maslow, A.H. (1965). *Eupsychian management: Making good management better: A psychologist's observation about effective management practice*. Homewood, IL: Richard D. Irwin.
- New Jersey Middle Grade Literacy Task Force (2004). *Improving the quality of literacy education in New Jersey's middle grades: Report of the NJ task force on middle grade literacy education*. New Brunswick, NJ: The Author.
- Rees, H.E. (1968). *Deprivation and compensatory education*. Boston, MA: Houghton Mifflin.
- Rutter, M., & Yule, W. (1975). The concept of specific reading retardation. *Journal of Child Psychology and Psychiatry*, 16, 181-197.
- Sreedharan, S. (2012, June 26). kidsREAD programme sees positive results. *Today [Education]*, p.17.

About the Author

Dr Noel Kok Hwee Chia, an assistant professor with the Early Childhood & Special Needs Education Academic Group at the National Institute of Education, is a former Lee Kong Chian Research Fellow (2010) at the Lee Kong Chian Reference Library, National Library Board, Singapore. In 2012, he was duly elected into the Omega Gamma Chi Honor Society – an integral part of the National Association of Special Education Teachers based in Washington, DC, USA.